Self-Assessments

on Concept (3.1)

Self-Assessment 1 on Lesson 1

1 (A) Choose the correct answer :

1. The Earth's system which contains mountains is ....
   a. atmosphere. b. geosphere.
   c. biosphere. d. hydrosphere.
2. When water evaporates from the ocean, interaction between .... and .... occurs.
   a. atmosphere – geosphere b. biosphere – hydrosphere
   c. atmosphere – hydrosphere d. biosphere – geosphere
3. Which sentence of the following describes the atmosphere ? ....
   a. The water and ice on the Earth.
   b. The rocks and soil on the Earth.
   c. The plants and animals on the Earth.
   d. The gases surrounding the Earth.

(B) What happens to ...?

The state of water when it evaporates.

....

....

2 (A) Correct the underlined words :

1. As water covers $\frac{3}{4}$ of the Earth's surface, our planet appears in <u>white</u> color from space. (....................)
2. When the fresh water of a river meets the salt water of a sea, <u>runoff</u> is formed. (....................)
3. During the water cycle in nature, water evaporates forming <u>rains</u>. (....................)

(B) Give a reason for the following :

The kind of water in oceans differs from that in rivers.

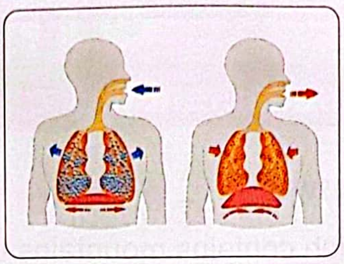
....

....

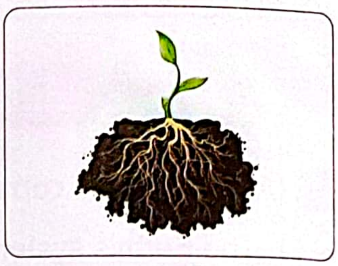
3 **Look at the following pictures, then complete the following sentences :**



(1)



(2)



(3)

1. Picture number .... represents the interaction between biosphere and geosphere.
2. Picture number .... represents the interaction between biosphere and hydrosphere.
3. Picture number .... represents the interaction between biosphere and atmosphere.

Self-Assessment 2 till Lesson 2

1 **(A) Correct the underlined words :**

1. When living organisms breathe, there is an interaction between <u>geosphere</u> and atmosphere. (....................)
2. The system that includes oceans, rivers and seas is called <u>biosphere</u>. (....................)
3. <u>Lakes</u> contain mixture of fresh water and salt water. (....................)

(B) Give a reason for the following :

Weathering of rocks due to floods is an example of an interaction between two Earth's spheres.

....

....

2 **(A) Put (✓) or (✗) :**

1. Waterfalls are part of atmosphere. (   )
2. Atmosphere and hydrosphere affect water cycle. (   )
3. There is an interaction between hydrosphere and geosphere when floods move soil and rocks to new places. (   )

(B) Cross out the odd word :

Water – Oxygen – Nitrogen – Carbon dioxide. (....................)

3 **Look at the opposite picture, then complete the following sentences using the words below :**

(atmosphere – biosphere – geosphere – hydrosphere)



1. Label Ⓐ refers to .... , while label Ⓑ shows gas bubbles which refer to ....
2. Label Ⓒ refers to .... , while label Ⓓ shows

Self-Assessments

on Concept (3.2)

Self-Assessment 6 on Lesson 1

1 **(A) Put (✓) or (✗) :**

1. All living organisms need water to survive. ( )
2. You should drink more water instead of juice to conserve water. ( )
3. Water makes about two-thirds of human body. ( )

(B) Give a reason for the following :

We should take a quick shower.

....

....

2 **(A) Cross out the odd word :**

1. Ponds – Oceans – Rains – Glaciers. (....................)
2. Nile River – Ocean – Lake Assal – Sea. (....................)

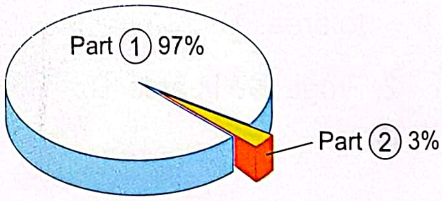
(B) What happens if ...?

People don't conserve fresh water.

....

....

3 **Look at the opposite chart,then choose the correct answer :**



1. Among the examples of water bodies that is represented by part ① is ....
   a. Nile River.
   b. an ocean.
   c. a pond.
2. All the following are examples of water bodies that is represented by part ②, except ....
   a. rivers. b. ponds. c. lake Assal.
3. All the following could be from the uses of water bodies that is represented by part ①, except ....
   a. drinking. b. fishing. c. transportation.

Self-Assessment 7 till Lesson 2

1 (A) Choose the correct answer :

1. .... are formed when water collects in low-lying areas.

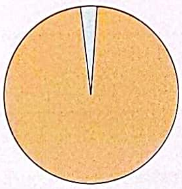
a. Seas   b. Oceans   c. Lakes   d. Rivers

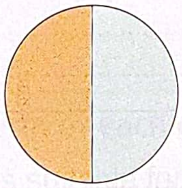
2. Which of the following include freshwater bodies ? ....

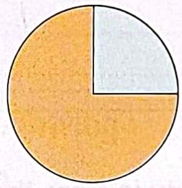
a. Rivers, lakes and streams.   b. Oceans, ponds and streams.

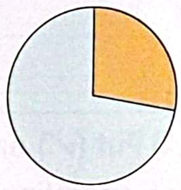
c. Estuaries, seas and lakes.   d. Wetlands, oceans and ponds.

3. Which of the following graphs represents the percentage of water that covers the Earth ? (☐ **Water** , ☐ **Land**)

a. 

b. 

c. 

d. 

(B) Give a reason for the following :

Deep valleys can be formed at the beginning of rivers.

....

....

2 (A) Write the scientific term of each of the following :

1. The type of water which is found in seas and oceans. (....................)
2. The land which is partially covered with water. (....................)
3. The water body that is formed when a river meets a sea. (....................)

(B) What happens if ... ?

Water is stored in the cracks and spaces of underground rocks.

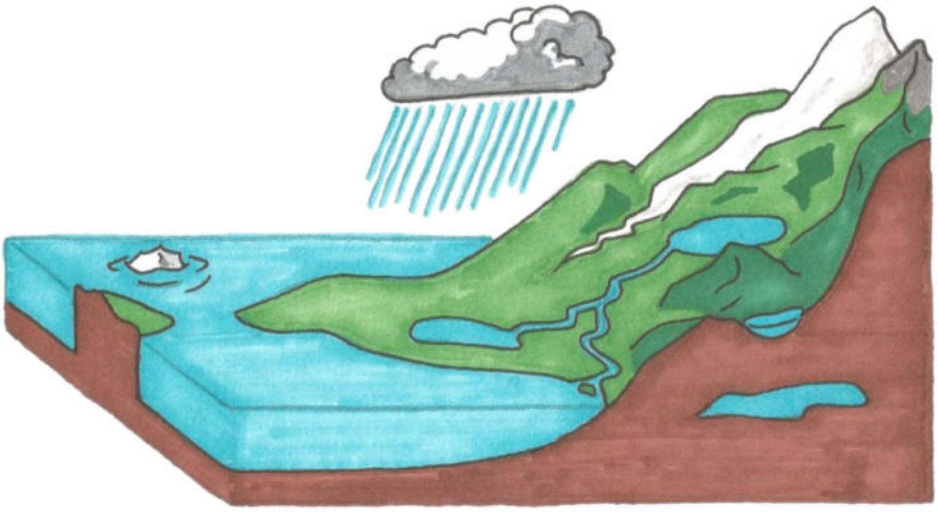
....

3 Put (F) in front of the sources of fresh water and (S) in front of the sources of salt water :

1. Nile River. (....................)
2. Seas. (....................)
3. Water streams. (....................)
4. Lake Assal. (....................)
5. Aquifers. (....................)
6. Oceans. (....................)

Science

Mr. Ahmed Elbasha



Primary 5

Second Term

Theme Three

Concept One - Lesson One

Hydrosphere

Name: -------------------------------

Scientists have divided the Earth into four main systems (or spheres) which are:



- **Geosphere:**

It is the system that includes:

- Rocks on the Earth's crust.

- Molten rocks and heavy metals that lie under the Earth's crust.

- **Atmosphere:**

- It is the system that is composed of a mixture of some gases such as nitrogen,
oxygen, carbon dioxide, water vapor ... etc.





- **Biosphere:**

It is the system that includes all living organisms such as microorganisms, plants,
animals, humans ... etc.

- **Hydrosphere:**

It is the system that includes all water on the Earth
(fresh water and salt water).



► How do living organisms use water?

Living organisms need water to drink, grow and survive.

► How does water affect nonliving things ?

Water can cause weathering and erosion of rocks on the Earth's surface.

1. **Weathering** means the breakdown of rocks into smaller particles due to the effect of rain, wind, temperature ... etc.

2. After rocks are broken down, **erosion process** happens which means the transportation of small particles of rocks to another place by water or wind.

Nearly <u>three-quarters</u> of Earth is covered by water, so our planet looks like a blue marble from space.

Water bodies on Earth can change from **liquid state** to:

- **Solid state** (ice) by freezing in extreme cold weather
- **Gas state** (water vapor) by evaporation in hot weather

Importance of water for life

Humans and animals drink water to survive.	
Plants need water to grow.	
Some animals and plants live in water.	

Uses of water

Humans use water in many purposes such as :

Preparing food



Bathing



Cleaning



Recreation



Travelling



Manufacturing



Water bodies on Earth have different forms and locations such as :

1. Oceans and seas



- They are very large water bodies.

- Oceans and seas always contain salt water.

2. Lakes



- A lake is a water body that is surrounded by land.

- Lakes are often contain fresh water, but sometimes they contain salt water.

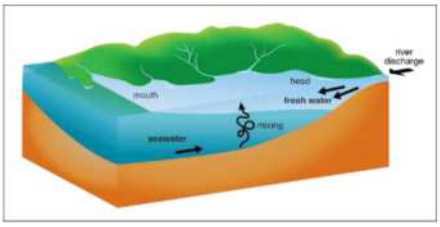
3. Rivers



- A river is a water body that always flows from an area of high altitude
(high place) to an area with lower altitude (lower place) in a definite channel.

- Rivers always contain fresh water.

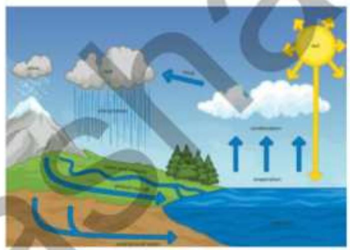
4. Estuary



- It is a water body at which the fresh water of a river meets the salt water of a sea or ocean.

- Estuaries always contain mixture of salt water and fresh water.

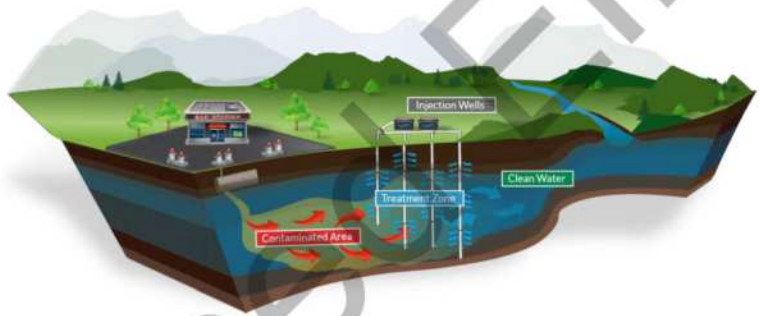
5. Runoff



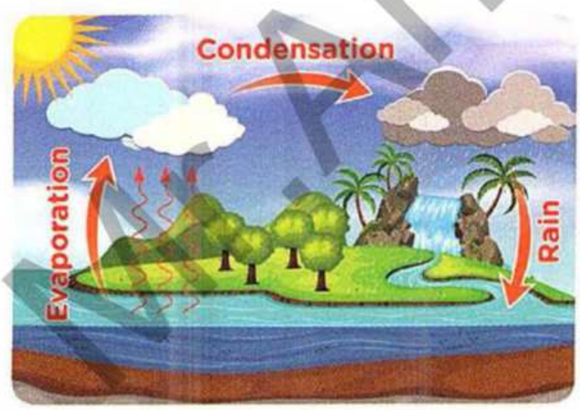
It is a water body that is formed of water from rain or melting of snow and moves into rivers or the ground.

6. Groundwater

It is the water that lies beneath (under) the Earth's surface.



Is water a renewable resource?



Water cycle

• Water that forms the hydrosphere is one of the **renewable resources** on Earth because it has what is called **"water cycle"** in nature.

• **During the water cycle in nature:**

- Water presents in water bodies on Earth evaporates and goes into the air forming clouds.

- Water returns back to the Earth's surface during raining.

Science

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Primary 5

Second Term

Theme Three

Concept One - Lesson Two

What is in your Environment?

Name: ------------------------------

Activity: to observe some components of an environment around you and classify them into the four main groups you have learned which are geosphere (land), hydrosphere (water), biosphere (life) and atmosphere (air) .

Imagine that you are at a park as shown in the picture below :



We can classify the living organisms and nonliving things in the previous picture as shown in the following table:

Geosphere (Land)	Hydrosphere (Water)	Biosphere (Life)		Atmosphere (Air)
• Soil. • Rocks.	• Puddle.	• Boy. • Birds. • Tree. • Flowers.	• Girl. • Butterflies. • Grasses.	• Wind (that moves the leaves). • Breathing of humans and animals.

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Primary 5

Second Term

Theme Three

Concept One - Lesson Three

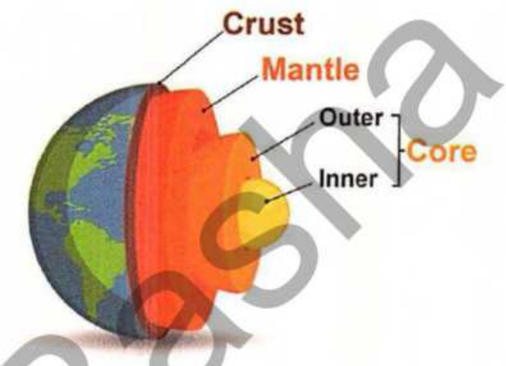
Earth's Systems

Name: ------------------------------------

Earth's Systems

1. Geosphere

It is the system that includes all the layers of Earth which are the crust, the mantle and inner and outer core.



- The word **"Geo"** means **"Earth".**

• This system contains:

- Rocks.
- Minerals.
- Soil.
- Landforms (such as mountains, valleys ... etc.)
- Molten rocks inside Earth.

2. Hydrosphere

It is the system that includes all of the water on, under and above Earth.

- The word "Hydro" means "water".

• This system contains:

- Oceans.
- Seas.
- Rivers.
- Groundwater.
- Glaciers.

1. Glacier is a large sheet of ice or snow that moves slowly over Earth's surface.
2. Hydrosphere includes another system known as "cryosphere" which means the frozen water on Earth.



Glacier

3. Atmosphere

It is the system that includes all the gases that surround Earth.

- The word **"Atmos"** means **"vapor".**
- **The atmosphere is usually called "air".**
- Air (atmosphere) is a mixture of many kinds of gases such as :



- Oxygen gas.
- Carbon dioxide gas.
- Nitrogen gas.

4. Biosphere

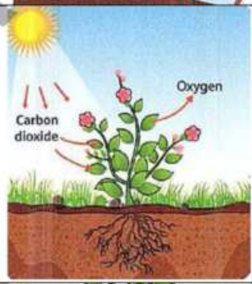
It is the system that includes all living organisms on Earth.

- The word "Bio" means "life".
- **Biosphere contains:**

- Humans.
- Animals.
- Plants.

Earth's systems interact:

The following table represents some phenomena that show the interaction between the different four systems of Earth:

Interactions	Phenomena	Example
Hydrosphere interacts with **geosphere**.	• Erosion of rocks by water. • Formation of lakes.	 
Atmosphere interacts with **biosphere**.	During **photosynthesis** process, plants interact with take in **carbon dioxide gas** from air and biosphere give out **oxygen gas** to air.	
Geosphere interacts with **biosphere**.	During **photosynthesis** process, **soil** provides nutrients for **plants roots.**	

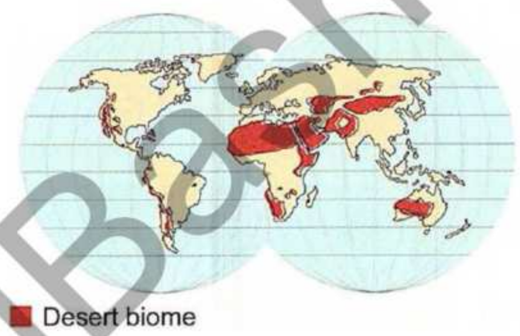
Characteristics of the Hydrosphere and Biosphere

Some characteristics of biosphere

Biome
It is a large region of the world that has similar oil, climate, plants and animals (wildlife).

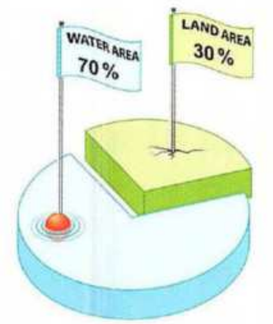
Examples of biomes:

- Deserts.
- Forests.
- Rainforests.
- Grassland.
- Wetland.



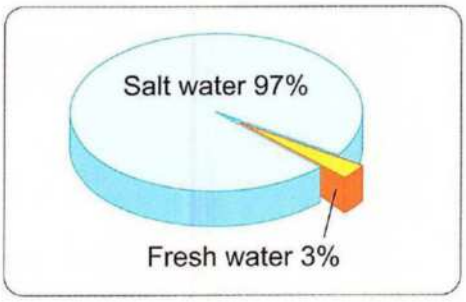
Some characteristics of hydrosphere

- Hydrosphere contains all the liquid, solid and gaseous water on Earth.
- Nearly 70 percent (70%) of Earth is covered by water.



Water that covers Earth may be:

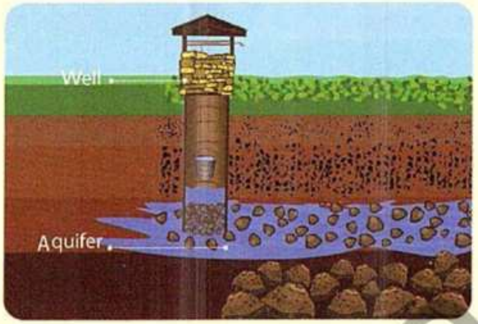
- **Salt water :**
  - It forms about 97 percent (97%) of water on Earth.
  - It is found in oceans, seas, gulfs and some lakes.
- **Fresh water :**
  - It forms about 3 percent (3%) of water on Earth.
  - It is found in rivers, rainwater, groundwater and most of lakes.



- Most of the fresh water on Earth is not found in liquid or running water, but it is found in the form of frozen water as large pieces of ice known as glaciers.

Notes

1. Groundwater is water that lies beneath (under) Earth's surface and has been leaked into Earth through a layer of porous rocks forming what is known as aquifer.
2. Groundwater supplies wells and springs with water.



Aquifer

Examples of hydrosphere and biosphere interactions:

Plants need water to survive



Humans drink water to survive



Animals drink water to survive

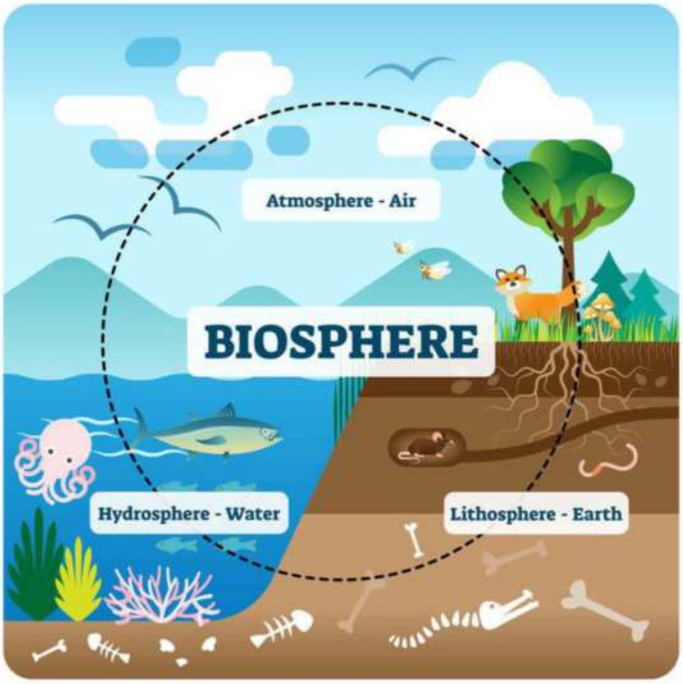


Water is the habitat of fish



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Primary 5

Second Term

Theme Three

Concept One - Lesson Four

Hydrosphere or Biosphere

Name: ---------------------------------

classify the following into hydrosphere or biosphere as the example given:

- A bird makes a home in a tree.
- Saltwater waves crash in the ocean.
- Running water in a river.
- Water evaporates from a pond.
- Ants eat a piece of bread.
- A snake eats a rat.

Hydrosphere	Biosphere

Types of Aquatic Ecosystems

Aquatic ecosystems on Earth can be classified in different ways such as, they can be classified into:

- Saltwater ecosystems.

- Freshwater ecosystems.

1. Saltwater ecosystems

- Oceans are the largest saltwater ecosystems that cover large parts of Earth's surface.

Saltwater ecosystems of oceans and seas include :

Shallow areas:	These areas contain coral reefs and intertidal ones .
Deep areas:	These areas are called abyssal zones which are very deep areas in oceans, so that sunlight cannot reach them.

Saltwater lakes:



- Some lakes have salt water.
- Lake Assal in Djibouti is an example of saltwater ecosystem.
- Lake Assal has a high concentration of natural salts, so it is too salty for fish and most aquatic animals to live in also, there are few plants that can grow in this area.
- There are many different types of bacteria live in Lake Assal.
- Lake Manzala, Lake Mariout, Lake Bardawil and Lake ldku are saltwater lakes found in Egypt.

2. Freshwater ecosystems

Freshwater ecosystems include :

Ponds and lakes :



Pond

- In many ponds and lakes, the water is present all year.
- Some other ponds and lakes dry up in the hot summer months, so animals and plants that live there must adapt to the changes that happen in these ponds and lakes.
- Lake Nasser, Lake Qaroun and Lake of Wadi Al-Rayan are freshwater lakes in Egypt.

Flowing water bodies:



Stream

- They include rivers and streams (streams are small bodies of flowing water).
- Water is always moving in the flowing water bodies.
- Streams and rivers connect other bodies of water such as lakes, oceans and seas.
- Many different plants and animals live in flowing water bodies.

Aquatic Ecosystems

Ponds

- **Type of water :** They have fresh water.
- **Water movement :** They have still water.
- **Species live in ponds :**

There are different living organisms that live in ponds such as :



Some plants like water lilies.



Some insects live and lay their eggs in ponds.



Some types of worms such as leeches live at the bottom of ponds.

Salamanders and frogs live in ponds and eat insects found there.



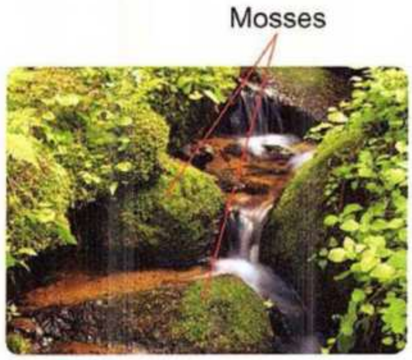


Streams

- **Type of water :** They have fresh water.
- **Water movement :** They have running water, where water in streams are cool and flows fast.
- **Species live in streams :**

There are different living organisms that live in streams such as :

- Some mosses attach themselves to the rocks of streams (mosses look like algae).



Stream

- Some animals live in streams such as :



Catfish



Crayfish



Trout

Oceans and seas

- **Type of water :** They have salt water.
- **Water movement :** Water of oceans and seas is constantly moving in the form of waves that crash onto the shore.
- **Species live in oceans :**

  There are many living organisms that live in oceans and seas such as :


Kelp


Dolphin


Starfish


Moses fish
(Flounder fish)

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Primary 5

Second Term

Theme Three

Concept One - Lesson Five

Microplastics

Name: ----------------------------------

To understand water, hydrologists must study how the hydrosphere interacts with the other spheres on Earth such as :

- **How water runs across the land (geosphere).**
- **How water affects living organisms (biosphere).**
- **What happens to water in air (atmosphere).**

Microplastics

▌Microplastics are plastic pieces whose lengths are less than 5 millimeters.

▌Microplastics are formed when plastic waste is broken down into small particles by wind, sunlight and wave action at sea.

▌Microplastics are found everywhere on Earth, from the highest place on land to the deepest part of the ocean.

▌Hydrologists are concerned about the amount of plastic pollution found in the hydrosphere.

▌Microplastics found in aquatic ecosystems are more harmful to aquatic organisms than large plastic waste, where aquatic organisms cannot differentiate between their real food and plastic waste, so they can eat these pieces of plastic and get harmed.



Analyzing pollution

▌A group of scientists in India wanted to learn more about the effects of microplastics on the environment.

▌These scientists took samples of the water and the soil of a polluted river and they found that microplastics were present in the water and the soil of that river.

▌After analyzing these samples, scientists found that most of these microplastics were from decayed plastic carry bags, packing materials, and fishing lines.

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Primary 5

Second Term

Theme Three

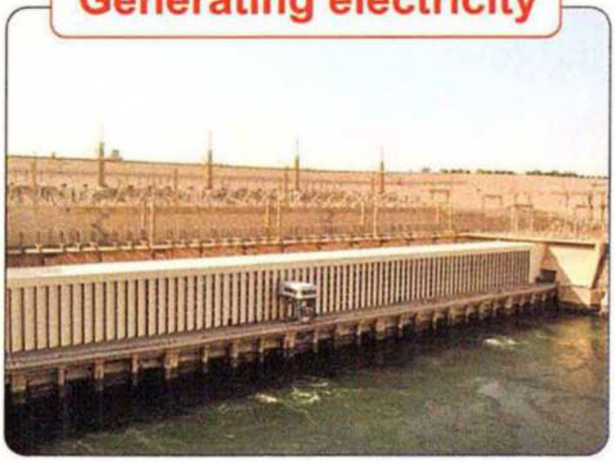
Concept Two - Lesson One

Uses of water

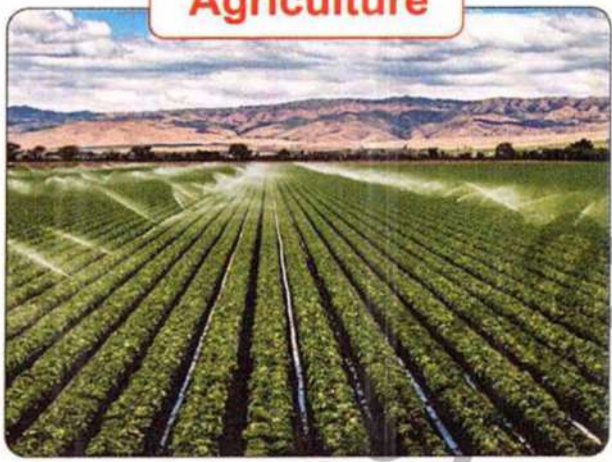
Name: ----------------------------------

Let's see some other uses of water such as:

Generating electricity



Agriculture



Sources of water

There are many sources of water on Earth such as :

- Rivers
- Streams
- Lakes
- Oceans
- Glaciers
- Groundwater (Aquifers)
- Ponds
- Seas
- Rains

Sources of fresh water and sources of salt water.

❶ Sources of fresh water



Rivers



Rains



Glaciers



Groundwater (Aquifers)



Ponds



Streams

❷ Sources of salt water


Oceans


Seas

Conserving fresh water

Conserving fresh water means using water in a correct way, because the percentage of fresh water that is suitable for drinking is very small compared to the percentage of water on Earth.

So, we must conserve the limited amount of fresh water through many ways such as:

1	Drinking more juice instead of water.	
2	Turning off water tap (faucet) during brushing your teeth.	
3	Taking a quick shower.	
4	Turning off the water, while washing your hair.	

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Primary 5

Second Term

Theme Three

Concept Two - Lesson Two

Water of Earth

Name: ----------------------------------

Water bodies

❶ A River:



Type of water: Fresh water.

Location: Mountains.

How is a delta formed?

A river often starts in the mountains as a stream → Fast moving water in a river can erode deep valleys. → As the water moves quickly across the land, it picks up sediments. → The flow of a river ends when it meets a sea or a larger river. → The water slows down and sediments are deposited at the river's endpoint forming a **delta**.

Note

Delta is a triangular-shaped area of mud and other sediments that forms when a river meets a sea or a larger river.



Delta of Egypt

❷ A lake:



Type of water: Most of lakes contain fresh water.

Location: Low-lying areas.

A lake is a large body of water surrounded by land.

A lake forms when water collects in a low-lying area.

❸ A wetland :



Type of water: Fresh water or salt water.

Location: Land partially covered with water.

From kinds of wetlands : Swamps (marshes) and ponds (bogs).

❹ an estuary:



Type of water: Saltwater mixes with fresh water.

Location: Where a river meets a sea or an ocean.

- Estuaries are home to thousands of plants and animals

❺ Groundwater:



Type of water: Fresh water.

Location: In the cracks and spaces of underground rocks.

- There is more amount of groundwater on Earth than the water in rivers and lakes

❻ Oceans:



Type of water: Salt water.

Location: Oceans surround the continents.

- All the oceans are connected to each other.

- The ocean's floor has mountains, plains and plateaus

Unit (3)
Our Earth's resources

Concept (1):
Hydrosphere and Biosphere interactions

Water

During your previous studies you've learnt that, water has an important role in keeping all organisms alive, as plants, animals, human and even microorganisms need it to survive. Water also causes some weather phenomena, like raining and snowing.

1) States:



(Ice)
Solid state

In extreme cold weather ←

Liquid water

→ In extreme hot weather



(Steam)
(Water vapor)
Gas state

2) importance:

a) Human and animals drink water to survive.

b) Plants need water to grow.

c) Some animals and plants live in water.

d) **It also can affect non-living things:** **Water can cause erosion and weathering of rocks.**

> **Weathering:** breaking down the rocks into small particles.
>
> **Erosion:** transportation of small particles to another place.

3) Uses:

Recreation	Bathing	Cleaning	Travelling
Preparing food	Manufacturing	Agriculture	Generating electricity **(the High Dam)**

 Created by: Miss Alaa Saeed

4) Water bodies:

Oceans and seas:

Very large and always contains salt water.

Surrounds the continents. (**oceans**)

All oceans are connected to each other.

The ocean's floor has mountains, plains and plateaus.



Lakes:

Are water bodies surrounded by land.

Usually contain fresh water and sometimes contain salt water.

Are formed when water collects in a low-lying area.



Rivers:

Always contain fresh water.

Location: Mountains.

Flow from an area of high altitude (**high place**) to an area of low altitude (**lower place**) in a definite channel.



Estuary:

At which salt water meets the fresh water so, it's always contain a mixture of salt water and fresh water.

It's formed along the edges of seas and oceans.

It's also a home for many animals and plants.



Wetland:

It's a land partially covered with water.

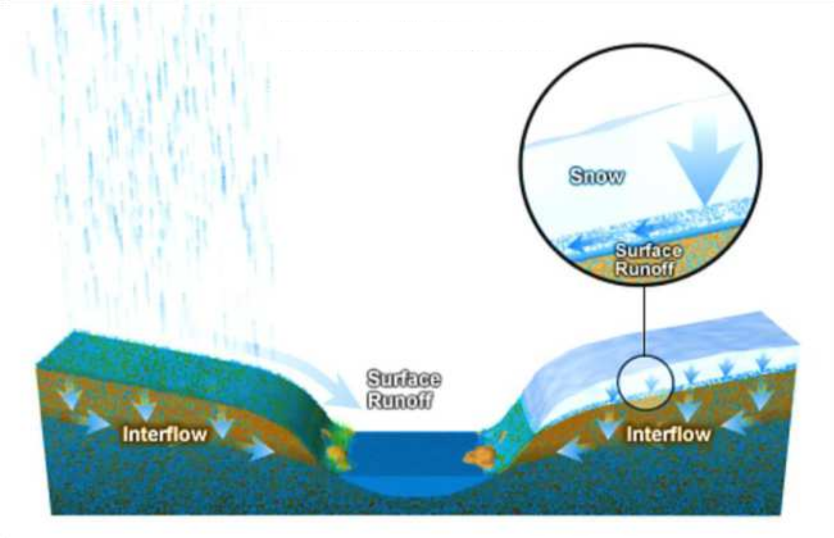
Contains fresh water or salt water.

Kinds: swamps **(marshes)** and ponds **(bogs)**.



Runoff:

Formed of water from rain of melting snow and moves into rivers or underground.



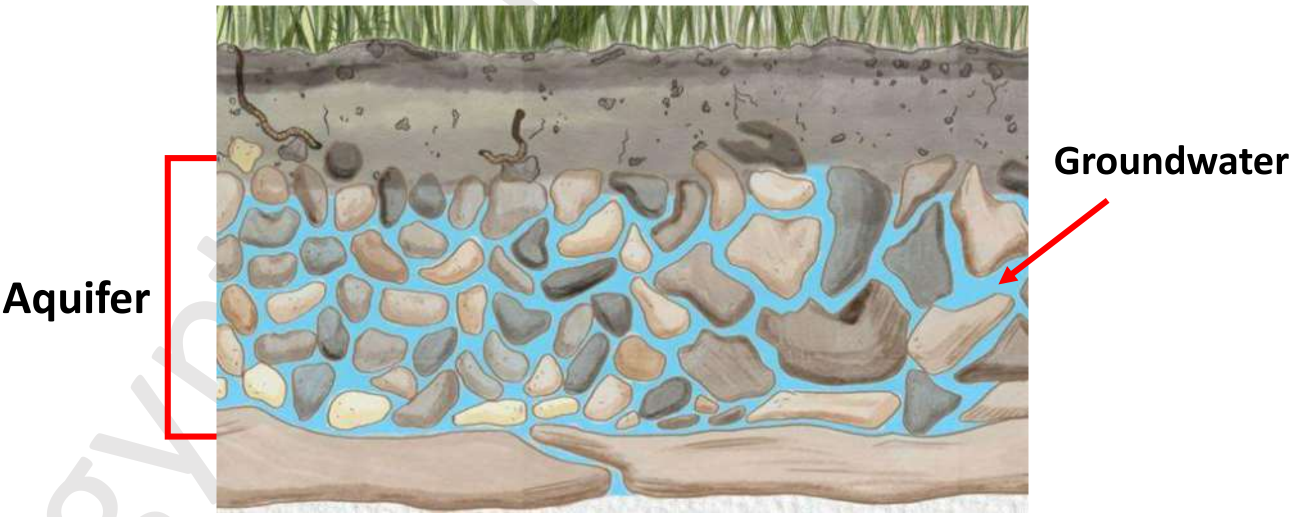
Groundwater:

The water that lies beneath (**under**) the Earth's surface.

Groundwater has been leaked into Earth through a layer of porous rocks forming known as **"aquifer"**

Groundwater also supplies **springs** and **wells** with water.

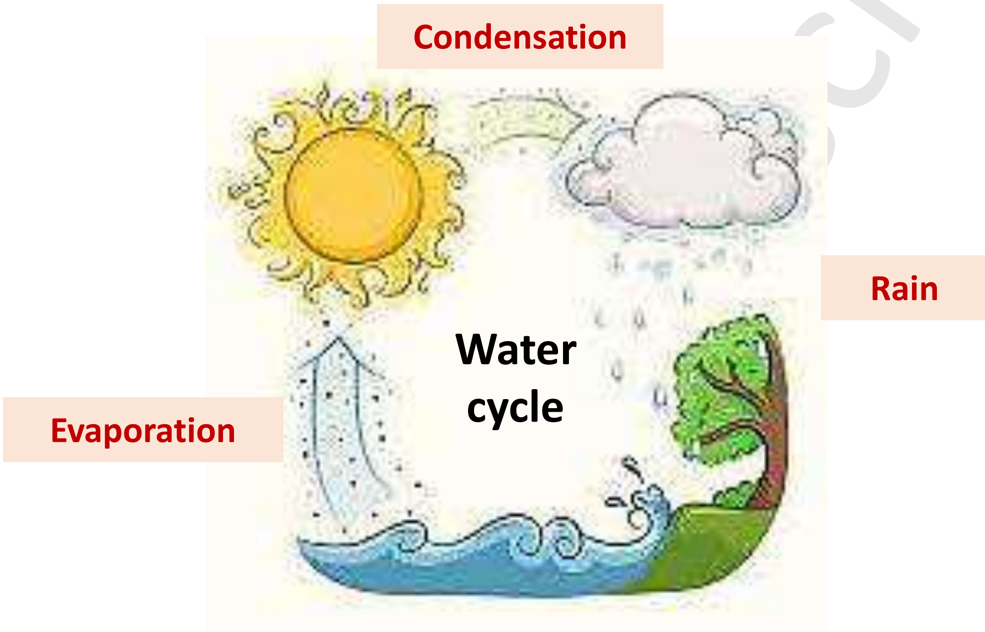
The amount of ground water is larger than the amount of water in rivers and lakes.



Renewable resource: **A natural resource that can be replaced.**

Water is a renewable resource cause it has what's called "**Water cycle**".

On high temperatures, the water in water bodies evaporates (water vapor) then condensed in the form of clouds, finally when temperature goes down more the water vapor turns into water in the form of rain.



Liquid state —Evaporation→ **Gas state**

Gas state —Condensation→ **Liquid state**

Solar energy plays an important role in the water cycle in nature, as it helps in the evaporation of water.

Plants are considered as a renewable resource:

Cause plants can be planted from seeds then these plants produce flowers that contain seeds, when these seeds kept in suitable conditions they grow in new plant.

CLASS WORK

A] Choose the correct answer:

1) By heating of water it changes from ………. state to …………. state.

a) solid – liquid b) liquid – gas

c) liquid – solid d) gas – liquid

2) At the beginning of water cycle, water …….. and goes into the air forming ………….

a) freezes – snow b) evaporates – clouds

c) freezes – clouds d) evaporates – snow

B] choose from column (B) that suits it in column (A):

(A)	(B)
1) Oceans	**a)** contain fresh water or salt water
2) Lakes	**b)** contain salt water only.
3) Rivers	**c)** contain mixture of fresh water and salt water.
4) Estuary	**d)** contain fresh water only.
5) Groundwater	**e)** it's the water found under the Earth's surface.
	f) is the water found in a gas state.

1) …………… 2) …………….. 3) …………….. 4) …………….. 5) ………………

HOME WORK

A] Choose the correct answer:

1) Water is used in all the following purposes, <u>except</u> …………

a) recreation b) burning c) bathing d) manufacturing

2) Which of the following is found between pores of rocks below Earth's surface ?

a) Ice b) Groundwater c) Oceans d) Water vapor

B] What happens to …..

Fresh water of a river when it meets the salt water of a sea.

………

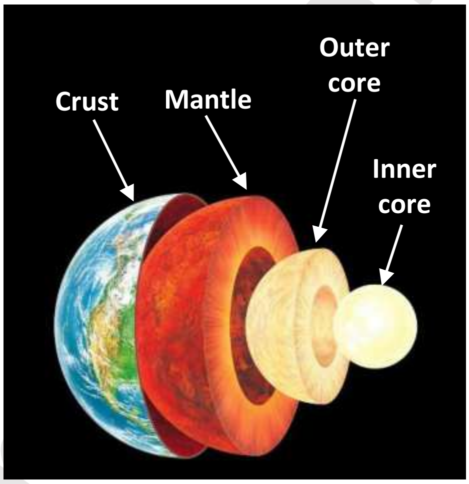
C] Write (true) or (false):

1) Water can change into water vapor in extreme cold weather. ( )

2) Some animals and plants live in water. ( )

The Earth's systems

Geosphere:



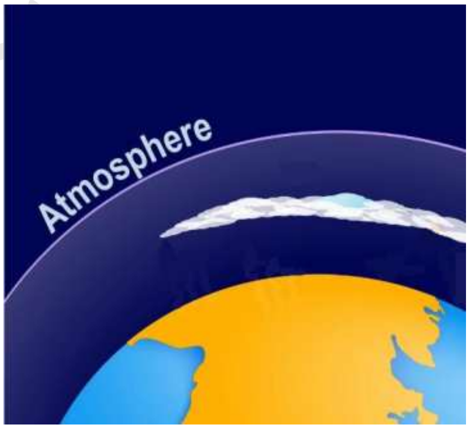
Is the system that contains all the layers of Earth (crust – mantle – outer core – inner core).

Geo = Earth

The system contains:

Rocks – soil – minerals
Landforms (mountains, hills, valleys)
Molten rocks inside the Earth.

Atmosphere (air):



Is the system that includes all the gases that surround the Earth.

Atmos = Vapor

It's a mixture of a lot of gases:
(Oxygen – Carbon dioxide – Hydrogen – Nitrogen)

Biosphere:

The system that includes all living organisms on Earth (animals – plants – human).

Bio = life

Some characteristics of biosphere:

Biome:
It's a large region of the world that has similar soil, climate, plants and animals.



Rainforests biome

Examples:
Desert – Forests – Rainforests – Grassland – Wetland

Hydrosphere:

The system that includes all water on, above and under the Earth.

Hydro = water

The system contains:

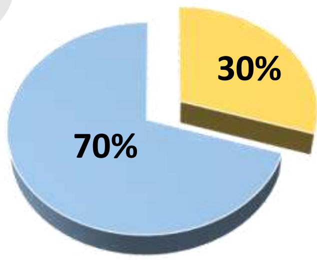
Oceans – Seas – Rivers – Groundwater - Glaciers → Large sheet of ice or snow that moves slowly on the Earth's surface And they represent most of the fresh water on Earth.

*Hydrosphere includes a system called "**Cryosphere**" that represents the frozen water on Earth.

Some characteristics of hydrosphere:

It contains all water on Earth (liquid, solid and gaseous).

Covers nearly three-quarters **(¾) (70%)** of the Earth's surface.



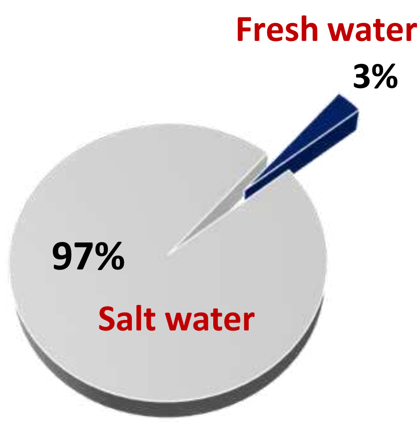
This water may be:

Salt water:

Forms about **(97%) of water** on Earth.
Found in oceans, seas, gulfs and some lakes.

Fresh water:

Forms about **(3%) of water** on Earth.
Found in rivers, rainwater, groundwater, streams and most lakes.



All water on Earth

Earth's systems interactions

Hydrosphere with geosphere	Erosion and weathering of rocks. Formation of lakes. Groundwater present under the Earth's surface in rocks (aquifer). Presence of rocks in water. A spring flows out from a rock.
Hydrosphere with biosphere	Presence on animals or plants in water bodies (oceans, seas, rivers, ponds, lakes or streams) . Human and animals drinking water. Plants absorbing water (irrigation of plants).
Biosphere with atmosphere	Plants taking in carbon dioxide and giving out oxygen. Human and animals inhaling oxygen and exhaling carbon dioxide. Air pollution due to burning of wood of trees.
Biosphere with geosphere	Worms, microorganisms living in soil or rabbits digging a borrow in the soil. Extending of roots of any plant in the soil to fix the plant. Soil providing the plants with nutrients (minerals).
Atmosphere with hydrosphere	Evaporation of water forming clouds and falling of rain.
Biosphere with cryosphere	Polar bears, arctic fox and penguins live on ice.

Types of Aquatic Ecosystems

Salt water

Shallow areas:

These areas contain coral reefs and intertidal zones

Intertidal zone: the area along the coast that disappears underwater at high tide and appears at the low tide.

Deep areas:

Called "**abyssal zones**" and sunlight cannot reach them.

Salt water lakes:

Lake Assal in Djibouti:
Has a high concentration of natural salts, so most of aquatic animals can't live in it but there are some plants and different types of bacteria live in this lake.

Lakes Manzala, lake Mariout, lake Bardawil and **lake Idku** found in Egypt.

Other water bodies:

Oceans and seas:

Water movement:

It's constantly moving in the form of waves that crash onto the shore.

Species that live in oceans:



Kelp



Dolphin



Starfish



Moses fish (flounder fish)

Notes

1) Oceans and seas environment include many smaller ecosystems.

2) Ocean water circulates around the world in patterns called "**ocean currents**"

3) The direction of ocean currents around the world can be predicted.

Fresh water

Still water

Lakes

Lake **Nasser**

Lake **Qaroun**

Lake **Wadi Al-Rayan**

ponds

some plants like **water lilies** live in ponds



Some **insects** live and lay their eggs in ponds



Some types of **worms** such as **leeches** live at the bottom of ponds



Salamanders and **frogs** live in ponds and eat insects found there





Flowing (running) water

Rivers

Streams (water is cool and flows fast)

Some **mosses** (look like algae) attach themselves to the rocks of streams





Catfish



Cray fish



Trout

Micro plastics and analyzing pollution:

Micro plastics:

- Their length is less than 5 millimeters.
- Produced due to the breaking down of plastic wastes by wind, sunlight or waves.
- They found every where on Earth.
- Micro plastics are more harmful than large plastic wastes.

Hydrologists

Are concerned about the amount of plastic pollution found in the hydrosphere.

Analyzing pollution:

A group of Indian scientists took samples of water and soil of a polluted river and found that, micro plastics are found in both water and soil. These micro plastics were from decayed plastic bags, packing materials and fishing lines.

Rivers carry plastic waste materials from land to the ocean.

CLASS WORK

A] Choose the correct answer:

1) Presence of dolphins in ocean represents an interaction between ………. and ……….

a) biosphere – hydrosphere　　b) biosphere – geosphere

c) hydrosphere - atmosphere　　d) hydrosphere – geosphere

2) Acacia tree has very long roots that grow downward through soil rocks, that represents an interaction between ……….. and ………..

a) biosphere – hydrosphere　　b) biosphere – geosphere

c) hydrosphere - atmosphere　　d) hydrosphere – geosphere

3) Water covers nearly ………… of the Earth's planet.

a) $\frac{1}{4}$　　b) $\frac{1}{2}$　　c) $\frac{3}{4}$　　d) $\frac{1}{5}$

B] choose from column (B) that suits it in column (A):

(A)	(B)
1) The word "Geo" refers to	a) Water
2) The word "Hydro" refers to	b) Earth
3) The word "Atmos" refers to	c) Life
4) The word "Bio" refers to	d) Vapor
	e) Sun

1) ……………　　2) ……………..　　3) ……………..　　4) ……………..

HOME WORK

A] Write (true) or (false):

1) Fresh water forms about 3% of water on Earth. (   )

2) Living organisms are parts of the geosphere. (   )

3) The place where two oceans meets called estuary. (   )

4) Rivers and streams are fresh water moving bodies. (   )

B] What happens if …..

Aquatic organisms eat pieces of plastic instead of their real food.

……

C] Give reasons for …….

Recycling of water bottles is more better than throwing them in seas and oceans.

……..

Worksheets with model answer on concept (3.1)

Worksheet (1)

1-Choose the correct answer:

1. All the following are components of the atmosphere, except…………

a. oxygen gas. b. nitrogen gas.

c. molten rocks. d. water vapor.

2. Rocks are broken down into smaller particles during …………………process.

a. photosynthesis. b. weathering

c. erosion. d. respiration

3. Which of the following is a part of the hydrosphere ?

a. Water. b. Air. c. Rocks. d. Plants.

4. Which of the following is a part of the biosphere ?

a. Ice. b. clouds. c. Water. d. Animals.

5. By heating of water it changes from……………. state to…...........

a. solid-liquid. b. liquid – solid.

c liquid-gas. d. gas liquid.

2-Write the scientific term of each of the following:

1. A water body that is surrounded by land.(……………………………….)
2. An area where the fresh water of a river meets the salt water of a sea. (……………………………….)
3. A cycle shows the continuous movement of water from the Earth to the atmosphere then to the Earth again.(……………………………….)
4. The process of breaking down of rocks into smaller particles due to the effect of rain, water or temperature.(……………………………….)

Worksheet (2)

1-Put (√) or (×):

1. Earth's systems don't interact with each other. (   )
2. When wind carries seeds of some plants to new places an interaction between the atmosphere and biosphere can be observed. (   )
3. Weathering of rocks because of the effect of rains is an example of an interaction between hydrosphere and biosphere. (   ).
4. Water evaporates from the surface of a lake will move from the atmosphere to hydrosphere. (   )

2-Complete the following sentences:

1. A rat that digs a barrow in the soil is an example of the interaction between……………………………and geosphere.
2. Irrigation of plants is an example of the interaction between two Earth's systems which are …………………..and ……………….……
3. Air pollution due to the burning of wood of trees is an example of an interaction between two Earth's spheres which are………………………...and…………………….……

Worksheet (3)

1-Write the scientific term of each of the following:

1. The system of Earth all different landforms. (……………………………….)

2. The Earth's system which is made up of water. (…………………………….)

3. The frozen water part of the hydrosphere. (……………………………….)

4. The Earth's system which consists of a mixture of gases surrounding Earth. (……………………………….)

2-Give reasons for

1. Importance of atmosphere for plants in making their food.

……

2. More than 50% of known living organisms live in the aquatic environments.

……

3. Most of the fresh water on Earth can't be used for drinking.

……

Worksheet (4)

1- Give reasons for:

1. Some ponds and lakes may dry up during some months.

....

2. No green plants can survive in the abyssal zones of oceans.

....

3. Mosquitoes lay their eggs in ponds.

....

2-What happens to ...?

1. Animals that live in lakes if they dry up.

....

2. The eggs of a frog if it lays its eggs in a river instead of a pond.

....



Worksheet (5)

1-Choose the correct answer

1. Hydrologists study the movement of……………… across the Earth.

a. air. b. rocks

c. water. d. planes

2. All the following are factors affecting the breakdown of plastics into microplastics, except………………..

a. sunlight. b. moon.

c. wind. d. sea waves.

3. Water evaporation and its condensing on planet Earth show an interaction between…………….. and………………

a. hydrosphere atmosphere. b. hydrosphere biosphere.

c. biosphere-geosphere. d . biosphere atmosphere.

2 -Put (√) or (X):

1. Microplastics are large plastic pieces which can harm oceans and aquatic life. ( )

2. Some aquatic organisms cannot differentiate between their real food and plastic waste. ( )

3. Microplastics can be found in water as well as in soil. ( )

4. Throwing plastic waste materials in rivers and seas never affect the life of aquatic organisms. ( )

Model answer on concept (3.1)

Worksheet (1)

1-Choose the correct answer:

1.c 2.b 3.a 4.d 5.c

2-Write the scientific term of each of the following:

1.Lake 2.Estuary

3.Water cycle. 4.Weathering

Worksheet (2)

1-Put (√) or (×):

1. x 2.√ 3.x 4.x

2-Complete the following sentences :

1.biosphere. 2.hydrosphere-biosphere 3. atmosphere-biosphere

Worksheet (3)

1-Write the scientific term of each of the following:

1. Geosphere. 2. Hydrosphere

3. Cryosphere. 4. Atmosphere

2-Give reasons for:

1. Because plants fake in carbon dioxide gas from air during photosynthesis process.

2. Because water covers about 70% of Earth's surface.

3. Because most of the fresh water on Earth are in the from of frozen water.

Worksheet (4)

1-Give reasons for:

1. Because when the temperature increases in summer, water evaporates faster.

2. Because the abyssal zones don't receive sunlight, which is important for making food in plants.

3. Because ponds have still water, so the eggs will not move away.

2-What happens to …?

1. They have to adapt to the changes that happen or they'll die.

2. The eggs will move away with the running water of a river.

Worksheet (5)

1-Choose the correct answer:

1.c 2.b 3.a

2-Put (√) or (X):

1.x 2. √ 3. √ 4.x



Worksheets with model answer on concept (3.2)

Worksheet (1)

[1] Choose the correct answer:

1- The basic liquid matter which is needed by humans, animals and plants to survive is……………

a. milk　　b. water　　C. Oil　　d. alcohol

2- Water can control the………. of living organisms bodies.

a. length　　b. height　　C. temperature　　d. volume

3- All the following are from sources of water on the Earth, except……………

a. aquifers　　b. ponds　　C. glaciers　　d. molten rocks

[2] Put (√) or (×):

1- Water makes about two-thirds of human body. (　)

2- Among the sources of fresh water are rains. (　)

3- The percentage of fresh water is higher than that of salt water, so we should conserve salt water. (　)

4- Turning off the water tap, while washing your hair is from the ways to conserve water. (　)

[3] Write the scientific term of each of the following:

1- It is the liquid that makes up about two-thirds of the human body (………………)

2- A type of water which is suitable for drinking (……………….)

february revision

Q1: Choose the correct answer:

1. Which of the following is a part of the hydrosphere?

a. Water. b. Air. c. Rocks. d. Plants.

2. **By heating of water it changes from**

a. solid-liquid. b. liquid - solid. c. liquid - gas. d. gas-liquid

3. **All the following are components of the atmosphere, except...**

a. oxygen gas. b. nitrogen gas.

c. molten rocks. d. water vapor

4. **At the beginning of water cycle in nature, water……….and goes into the air forming…….**

a. freezes -snow. clouds. b. evaporates - clouds.

c. freezes d. evaporates - snow.

5- **Rocks are broken down into smaller particles during……. process.**

a. photosynthesis b. weathering

c. erosion d. respiration

6- **Falling of a small tree due to blowing of strong winds is an example of an interaction between….. and…..**

a. geosphere- atmosphere.

b. biosphere - hydrosphere.

c. hydrosphere - geosphere

d. atmosphere - biosphere.

7. **Acacia tree has very long roots that grow downward through soil rocks to search for groundwater. Which Earth's sphere is not involved in this sentence?**

a. Hydrosphere. c. Atmosphere.

b. Geosphere. d. Biosphere.

8. **Rainwater is a part of……**

a. biosphere. b. hydrosphere.

c. geosphere. d. atmosphere.

9.**Groundwater is present under Earth's surface in rock and soil pores. This is interaction between …and……….**

a. geosphere - atmosphere.

b. biosphere - atmosphere.

c. geosphere - hydrosphere.

d. hydrosphere – biosphere

10- **Presence of dolphins in oceans represents an interaction between…….and……**

a. biosphere - hydrosphere.

c. hydrosphere - atmosphere.

b. biosphere - geosphere.

d. hydrosphere-geosphere.

11. **Mountains and valleys are parts of**……………….

a. geosphere. b. atmosphere.

c. biosphere. d. hydrosphere.

12. **The number of Earth's layers that form geosphere is**

a. two b. four c. six d. eight

13. **Formation of lakes is an example of an interaction between….and……**

a. biosphere - hydrosphere.

b. atmosphere - biosphere

c. hydrosphere - geosphere.

d. geosphere - atmoshpere.

14. **Roots fix plants in the soil, this is an interaction between….**

a. biosphere - atmosphere.

c. hydrosphere - geosphere.

b. biosphere - geosphere.

d. hydrosphere - atmosphere.

15- **Which of the following is not a component of the hydrosphere ?**

a. Oceans. b. Rivers. c. Lakes. d. Rocks

16- **A spring flows out from a rock is an example of an interaction between……and…….**

a. hydrosphere - geosphere.

c. biosphere - geosphere.

b. hydrosphere - biosphere.

d. biosphere - atmosphere

17- **Aquatic ecosystems can be classified into............ ecosystem and…..ecosystem.**

a. forest - desert.

b. savannah - tundra.

c. grassland - rainforest.

d. freshwater - saltwater.

18- **All the following are factors affecting the breakdown of plastics into microplastics, except**

a. sunlight. b. moon. c. wind. d. sea waves.

20- **Hydrologists study the movement of…..across the Earth.**

a. air b. rocks C. water d. planes

21- **All the following organisms can be negatively affected by throwing plastic waste in seas, except**

a. fish. b. shrimps. c. corals. d. foxe

22- **Water can control the…..of living organisms bodies.**

a. length b. height

c. temperature d. volume

23- **Human can use water in all the following purposes, except**

a. fishing. b. transportation.

c. generating electricity.

d. weathering of rocks.

24-**Among the sources of water which human can use for drinking**

a. seas. b. oceans.

c. saltwater lakes. d. rivers.

Q2-Complete the following sentences: -

1. The groundwater found in soil and rocks is an example of interaction between two spheres which are…….and…..

2. Water bodies on Earth can change from liquid state to…………… freezing, while they can change into……..

3. A water body that is formed of water from rain or melting of snow and moves into rivers or the ground is called…..

4. When a river meets a sea, an ....is formed

5 . During the water cycle in nature, water evaporates forming……… then it returns back to the Earth's surface during…………

6- Irrigation of plants is an example of the interaction between two Earth's systems which are…..and……..

7- Air pollution due to burning of wood of trees is an interaction between two Earth's spheres which are…………and………..

8- A rat that digs a barrow in the soil is an example of the interaction between………………..and geosphere.

9- The large sheet of ice or snow that moves slowly over Earth's surface is knows as

10- The amount of fresh water on Earth is.............. than the amount of salt water.

11- Most lakes have water, while some other lakes have

12- We can classify the aquatic ecosystems according to their amounts of salt into…….ecosystem and………ecosystem.

13- According to water movement, ponds have……. water compared streams that have………..water.

14- Intertidal zone is the area along the ocean between the……. and………..tide.

15- Water runs across the land is an example of an interaction between hydrosphere and…..

16- The scientists who study water on Earth are called

17- Large plastic waste in aquatic ecosystems are….harmful to aquatic organisms than microplastics.

18- In High Dam, water is used to generate……

19- We must take a quick shower to conserve…..

Q3-Write the scientific term of each of the following:

1- The frozen water part of the hydrosphere. ( )

2- The Earth's system which consists of a mixture of gases surrounding Earth. ( )

3- The system of Earth which contains all different landforms.( )

4- The system that includes humans, animals and plants on Earth.

5- The area along the coast that disappears at the high tide and appears at the low tide.

6- Areas of the ocean which contain coral reefs and intertidal zones.

7- The largest saltwater ecosystems that cover large parts of Earth's surface.

8- Tiny plastic particles that result from the breakdown of larger plastics

9- A type of pollution that occurs as a result of throwing waste in rivers and seas.

10- The scientist who studies water and its movement around the Earth.

11- A type of water which is suitable for drinking.

12 - It is the liquid that makes up about two-thirds of the human body.

Q4 : Give reasons for :

1. Water that forms the hydrosphere is one of the renewable resources on Earth.

…………………………………………………………………………

2. Water is important for all plants on Earth.

…………………………………………………………………………

3. Our planet looks like a blue marble from the space.

…………………………………………………………………………

4. Hiding of worms inside the soil is an example of an interaction between two Earth's spheres.

…………………………………………………………………………

5. More than 50% of known living organisms live in the aquatic environments.

…………………………………………………………………………..

6. Importance of atmosphere for plants in making their food.

…………………………………………………………………………

7- Mosquitoes lay their eggs in ponds.

…………………………………………………………………………

8- No green plants can survive in the abyssal zones of oceans.

…………………………………………………………………………

9- Some ponds and lakes may dry up during some months.

…………………………………………………………………………

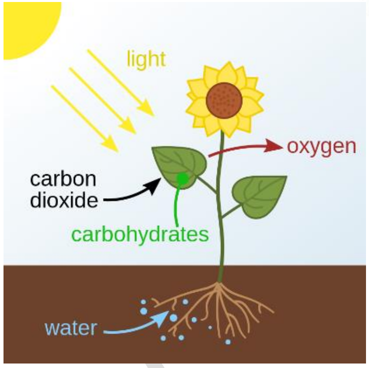
8- Recycling the plastic bottles is better than throwing them in seas and oceans.

…………………………………………………………………………

9-You should turn off water tap during brushing your teeth.

…………………………………………………………………………

Q5- Green plants can make their food by photosynthesis process. In this process plants take water from the soil, carbon dioxide and sunlight.



From the previous paragraph, find out the words that belong to each system and write them in the following table.

Atmosphere	Hydrosphere	Biosphere	Geosphere

Q6 What happens to ?

1. Fresh water of a river when it meets the salt water of a sea.

……………………………………………………………………

2. The state of water when it is subjected to extreme cold weather.

……………………………………………………………………

3- Aquatic organisms eat pieces of plastic instead of their real food.

……………………………………………………………………

4- People don't conserve fresh water.

……………………………………………………………………

Q7 Put (√) or (X):

1. When wind carries seeds of some plants to new places, an interaction between atmosphere and biosphere can be observed. ( )
2. Water evaporates from the surface of a lake will move from atmosphere to hydrosphere. ( )
3. Earth's systems don't interact with each other. ( )

Q8 Choose from column (B) what suits it in column (A):

(A)	(B)
1. The word "Geo" refers to	a. water
2. The word "Hydro" refers to	b. Earth
3. The word "Atmos" refers to	c. life
4. The word "bio" refers to	d. vapour
	e. Sun

Q9 - Look at the opposite picture, in which area A shows a river, and area C shows an ocean, then choose the correct answer :



1. Area B represents.....

a. pond. b. lake

c. estuary. d. groundwater

2. Water lilies can be found in…….

a. area A. b. area C.

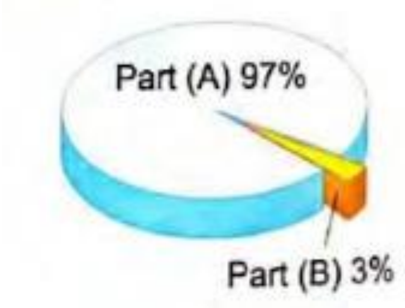
c. both area A and area C. d. both area B and area C

3. All the following organisms can C be found in area, except

a. dolphin. b. starfish.

c. flounder fish. d. frog.

Q10-Look at the opposite graph, then complete the sentences below:



1- **Part…..represents fresh water, while part……………….represents salt water.**

2- **The type of water which human can drink, is represented by part……………**

3. Ocean is an example of water bodies which is included in part………………..

4. We must conserve the type of water that is represented by part...............

CONCEPT ONE: HYDROSPHERE AND BIOSPHERE INTERACTIONS

Activity (1): Can you explain:

The earth is a complex system that contains living organisms and nonliving things that interact with each other.

Scientists have divided the earth into four main systems or spheres which are:

1-Geosphere	The system that includes rocks on the earth's crust Molten rocks and heavy metals lie under the earth's crust
2-Atmosphere	The system that is composed of mixture of gases such as oxygen, nitrogen, carbon dioxide and water vapor etc.
3-Biosphere	The system that includes all living organisms such as microorganisms, animals, plants and human etc.
4-Hydrosphere	The system that includes the water on earth (fresh and salt water)

How does the earth's biosphere interact with earth's hydrosphere?

1-Human and animals drink water.

2-Some plants and animals live in water.

Activity (2): Ask like a scientist: Water's impact on living organisms

All living organisms need water to drink, grow and survive.

Water affects non-living things ***Why?***

Water can cause weathering and erosion of rocks on earth.

Weathering:

The breaking down of rocks into smaller particles due to the effect of wind, rain and temperature etc.



After the weathering, erosion happens

Erosion :

The transportation of small particles of rocks to another place by wind or water.

Activity (3): Observe like a scientist: The importance of water for life on earth

Water exists everywhere it is found in **rivers, lakes, oceans** and **underground**.

Nearly **three-quarter** of earth is covered by **water** , so our planet looks like **a blue marble from space.**



Water on earth can change from **liquid** state into **solid** state by **freezing** or **gas** state by **evaporation**

*The total amount of water on earth **doesn't change** even if water changes from one state into another, we can't make new water, but we can **recycle it**.*

Importance of water for life

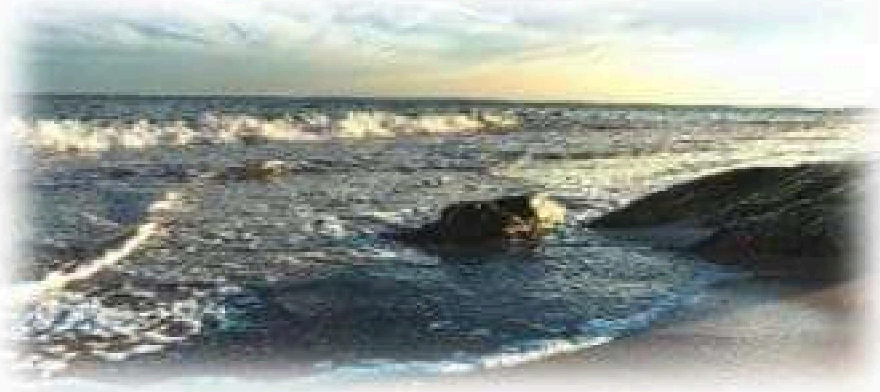
1-Human and animals need water to drink	 
2-Plants need water to grow	
3-Some animals and plants live in water	

Uses of water

Human use water in many purposes such as :

1-Preparing food	**2-Bathing**	**3-Cleaning**
4-Recreation	**5-Travelling**	**6-Manufacturing**

Activity (4): Evaluate like a scientist: What do you already know about hydrosphere and biosphere interactions?

1-Oceans and seas	are very large water bodies and contain **salt water**	
2-Lakes	are water bodies surrounded by land.	
3-Rivers	are water bodies that always flow from area of high altitude to area of lower altitude in a definite channel. always contain **fresh water.**	
4-Runoff:	is a water body that is formed of water from rain or melting of snow and moves into river or the ground	

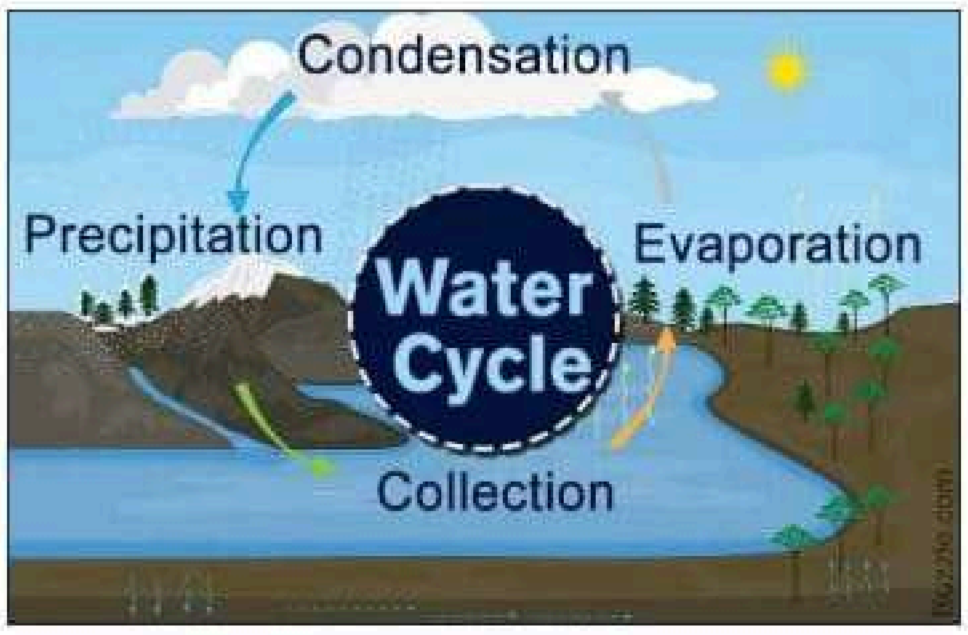
5-Estuary	a water body at which the fresh water of a river meets the salt water of a sea or ocean. Always contain **fresh and salt water.**	
6-ground water	is the water that lie beneath or under the earth's surface	

Water is one of the **renewable resource** on the earth ***because it has water cycle.***

During the water cycle in nature:

1-**Water** in water bodies **evaporate** into the air forming **clouds.**

2-**Water** return to the earth's surface during **raining.**



Plants are one of the biosphere components.

- Plants can be planted from seeds that grow up to new plants.
- Plants depend on water to grow and survive , so the plants are affected if the water amount decreased or get polluted.



Hydrosphere interacts with the biosphere where living organisms such as plants in biosphere depend on the hydrosphere to survive

Exercises

A] Choose the correct answer:

1-Which of the following is a part of the hydrosphere?

a. water b. rocks c. air d. plants

2- Which of the following is a part of the biosphere?

a. ice b. clouds c. water d. animals

3-Water is used in all of the following purposes except.

a. Recreation b. burning c. bathing d. manufacturing

B] Complete the following sentences:

1-Water is responsible for ……….process and …………..process of rocks.

2-When a river meets a sea ……………is formed.

3-The earth system that includes all living organisms is called……………..

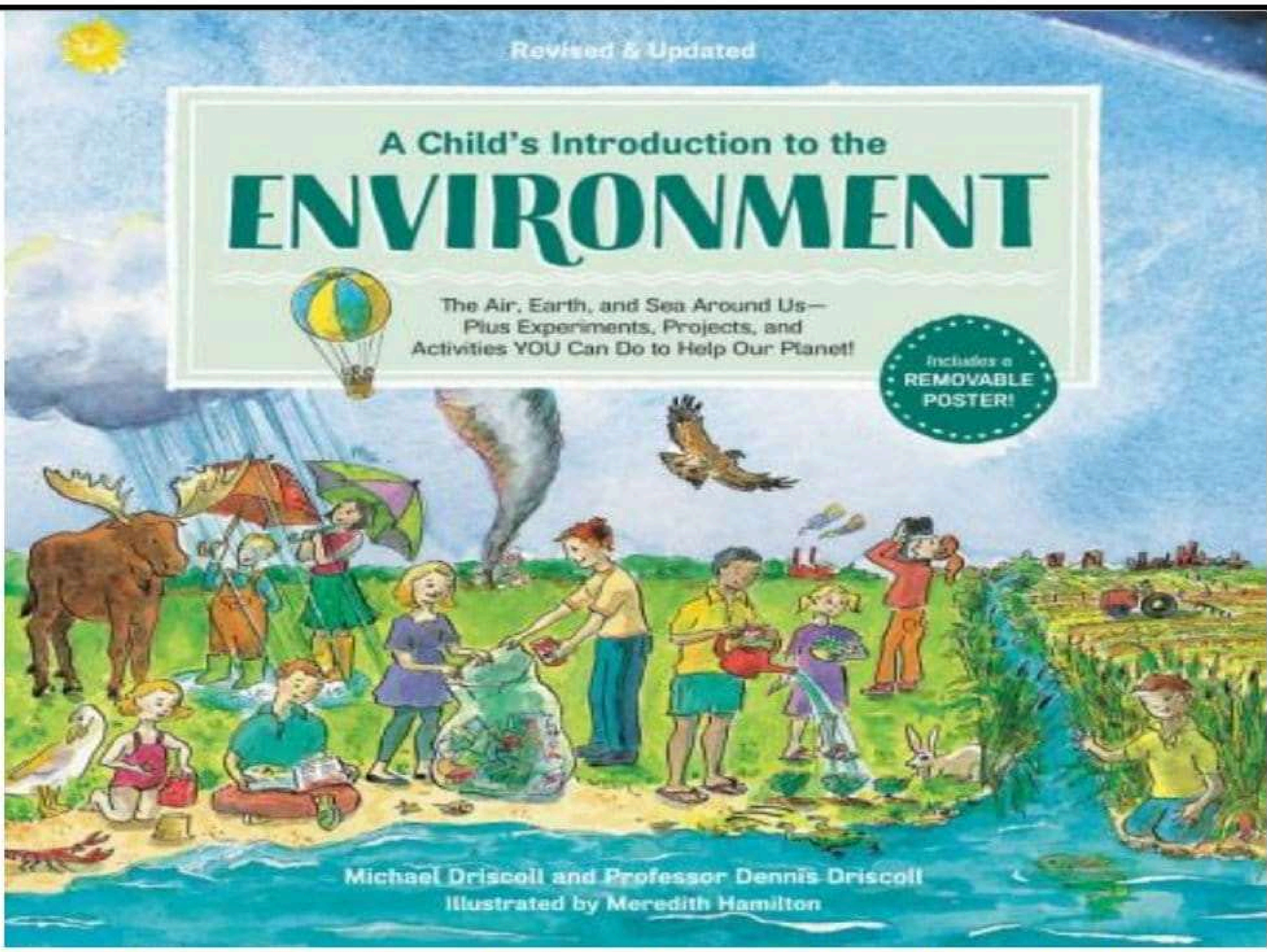
4-the groundwater is soil and rocks is an example of the interaction between two sphere which are ………………and…………………

C] Give reason:

Our planet looks like a blue marble from space.

……………………………………………………………………………………………………

Activity (5): Investigate like a scientist: What's in your environment?



Classify the living organisms and non-living things in the following table:

Geosphere	Hydrosphere	Biosphere	Atmosphere

Exercises

A] Choose the correct answer:

1-Rainwater is a type of …………………

a-Hydrosphere b-biosphere c-geosphere d-atmosphere

2-Falling of a small tree due to the blowing of strong winds is an example of an interaction between …………………..and……………..

a-Geosphere – atmosphere b-biosphere – hydrosphere

c-hydrosphere – geosphere d-atmosphere – biosphere

3-presence of dolphins in oceans is an interaction between……………..

a-biosphere –hydrosphere b-biosphere – geosphere

c-hydrosphere – atmosphere d-hydrosphere – geosphere

B] Put (√) or (×):

1-Earth's system don't interact with each other. (   )

2-Water evaporates from the surface of a lake will move from atmosphere to hydrosphere. (   )

3-Weathering of rocks as a result of the effect of rains is an example of interaction between hydrosphere and biosphere. (   )

C] Give reason:

Irrigation of plants is an example of an interaction between two earth's spheres.

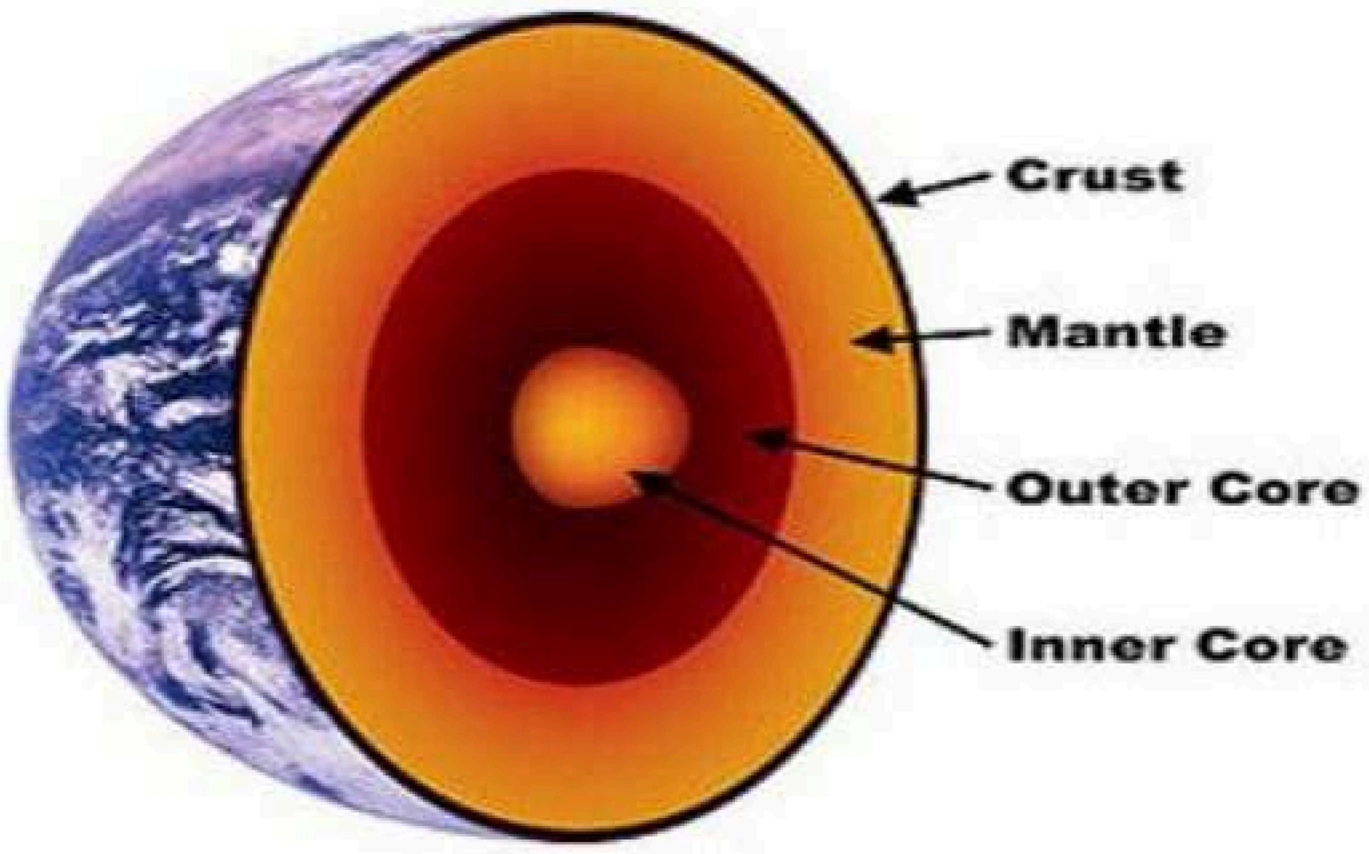
……………………………………………………………………………………………….

Activity (6): Analyze like a scientist: Earth's system

Geosphere:

It is the system that includes all the layers of Earth which are the **crust, the mantle and inner and outer core.**

- The word **"Geo"** means **"Earth".**



This system contains:

-Rocks. **- Minerals.** **- Soil.**

-Landforms (such as mountains, valleys... etc.)

- Molten rocks inside Earth.

Hydrosphere

It is the system that includes all of the **water** **on, under and above Earth**

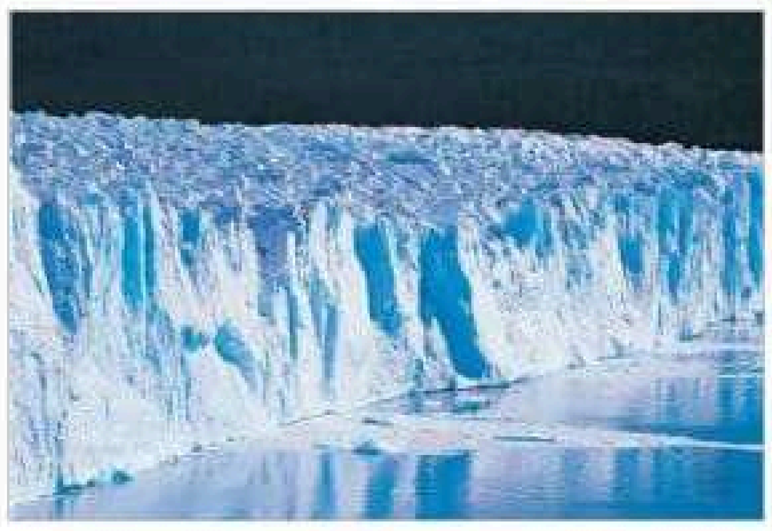
The word **"Hydro"** means **"water".**

This system contains:

- Oceans. **- Seas.** **– Rivers** **-Groundwater.** **-Glaciers.**

Glacier is ***a large sheet of ice or snow that moves slowly over Earth's surface.***

Hydrosphere includes another system known as "cryosphere" which means the frozen water on Earth.



Atmosphere

It is the system that includes all the **gases that surround Earth.**

- The word "**Atmos**" means "**vapor**".

The atmosphere is usually called "**air**".

Air (atmosphere): is a **mixture of many kinds of gases such as:**

-Oxygen gas. -Carbon dioxide gas. -Nitrogen gas.

Biosphere

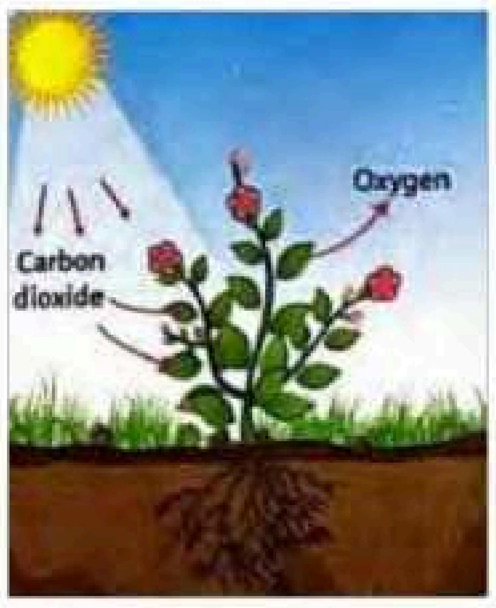
It is the system that includes **all living organisms** on Earth.

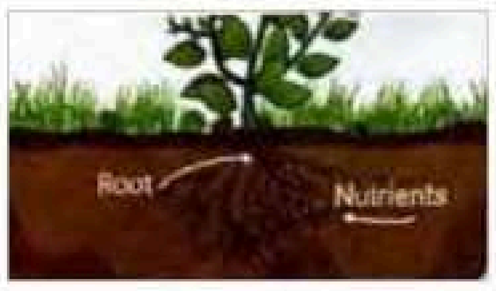
- The word "**Bio"** means **"life".**

Biosphere contains: - Humans. - Animals. - Plants.

Earth's systems interact

The interaction between the different four systems of Earth:

Interactions	Phenomena
Hydrosphere interacts with geosphere.	-Erosion of rocks by water. -Formation of lakes.  
Atmosphere interacts with biosphere.	During photosynthesis process, plants take in carbon dioxide gas from air and give out oxygen gas to air. 

Geosphere interacts with biosphere.	During photosynthesis process, soil provides nutrients for plants roots. 

Activity (7): Observe like a scientist: Characteristics of biosphere and hydrosphere

Biosphere

Biosphere is any part of Earth in which life can exist where it includes humans, animals and plants.

Biome: It is a large region of the world that has similar soil, climate, plants and animals (wildlife).

Examples of biomes:









- Grassland. - Rainforests. - Deserts. - Forests. - Wetland.

Hydrosphere

Hydrosphere contains all the liquid, solid and gaseous water on Earth.

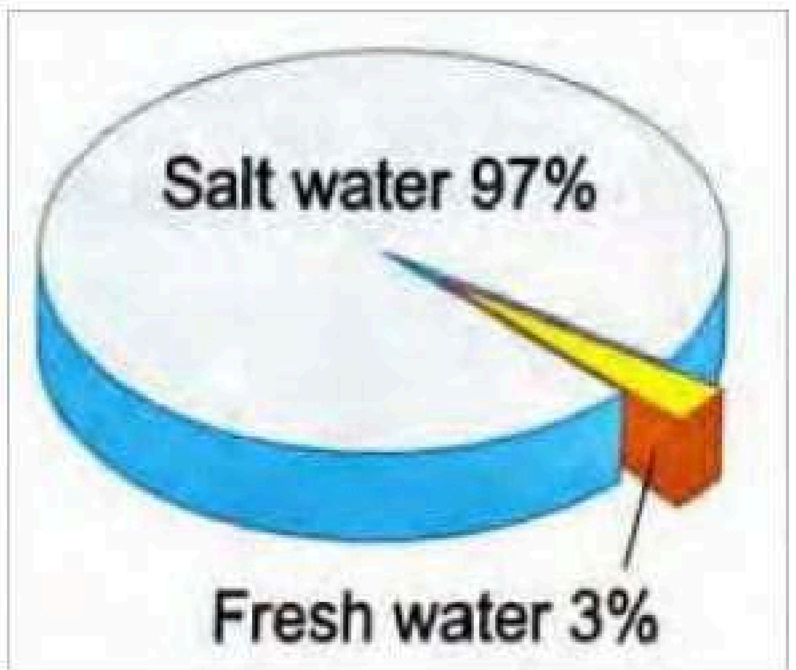
- Nearly **70% of Earth is covered by water**.

Water that covers Earth may be:

Salt water:

-It forms about **97% of water on Earth.**

-It is found in **oceans, seas, gulfs** and **some lakes**.

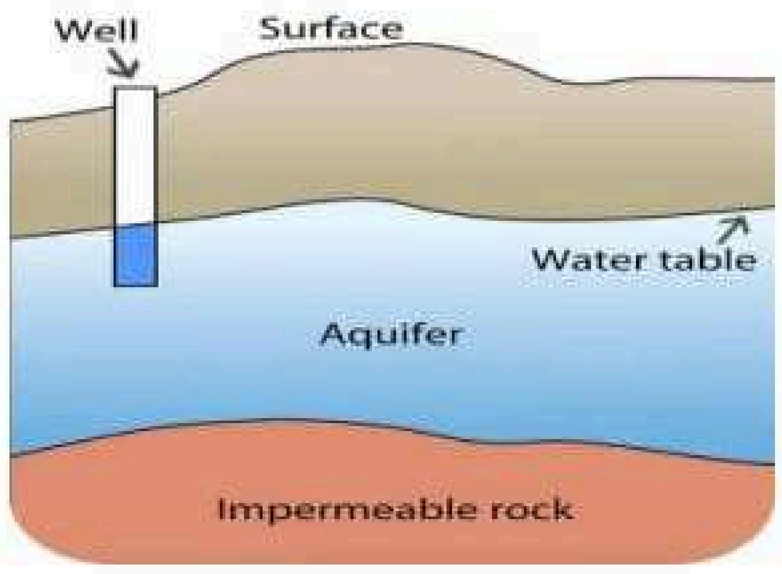


Fresh water:

- It forms about **3% of water on Earth.**

-It is found in **rivers, rainwater, ground water** and **most of lakes**.

-Most of the fresh water on Earth is not found in liquid or running water, but it is found in the form of frozen water as large pieces of ice known as **glaciers**.



-***Ground water*** *is water that lies beneath (under) Earth's surface and has been leaked into Earth through a layer of porous rocks forming what is known as* ***aquifer.*** **Ground water** supplies **wells and springs** with water.

Examples of hydrosphere and biosphere interactions:

1. **Human drink water to survive**
2. **Animals drink water to survive**
3. **Plants need water to survive**
4. **Water is the habitat of fish**

Exercises

A] Choose the correct answer:

1. Hydrosphere includes all the following items, except…….

a. oceans. b. rivers.

c. molten rocks. d. groundwater

2. The large sheets of ice or snow that moves slowly over Earth's surface called……….

a. minerals. b. glaciers.

c. rocks. d. biosphere.

3. Roots fix plants in the soil, this is an interaction between ……… and ……

a. biosphere- atmosphere. b. biosphere- geosphere.

c. hydrosphere- geosphere. d. hydrosphere- atmosphere.

Put (√) or (x):

1. Geosphere contains crust and mantle only. (   )

2. Atmosphere is a mixture of some different gases. ()

Activity (9): Evaluate like a scientist: Hydrosphere or biosphere

Classify the following observations in the table below into hydrosphere or biosphere:

1.A bird makes a home in a tree
2.water evaporates from a pond
3.saltwater waves crash in the ocean
4.Ants eat a piece of bread
5.Running water in a river
6.A snake eats a rat

Hydrosphere	Biosphere
1. …………………………………………	1. …………………………………………
2. …………………………………………	2. …………………………………………
3. …………………………………………	3. …………………………………………

Aquatic Ecosystems on Earth can be classified:

Activity (10): Analyze like a scientist: Types of Aquatic Ecosystems

1. Saltwater ecosystems 2.Freshwater ecosystems

Saltwater ecosystems:

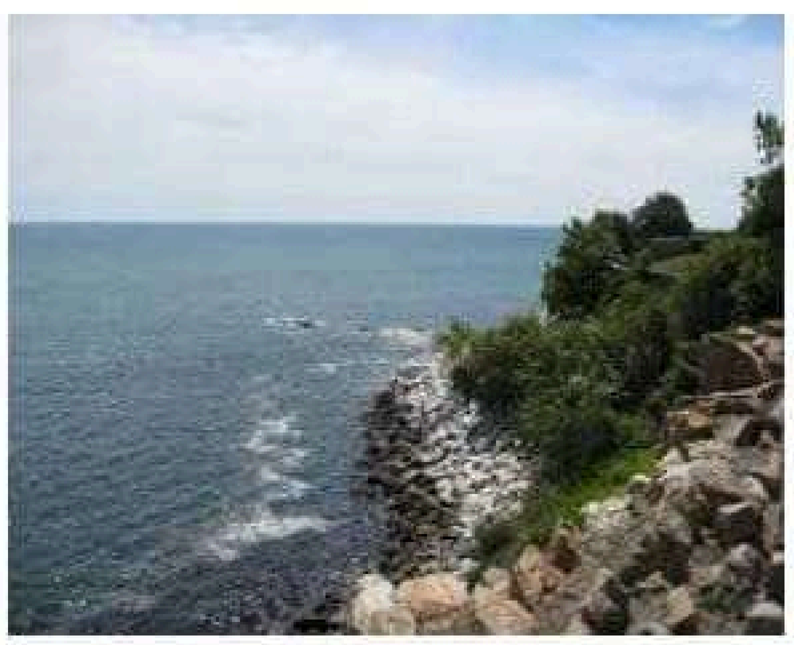
Oceans are the largest saltwater ecosystems



Saltwater ecosystems of oceans and sea include:

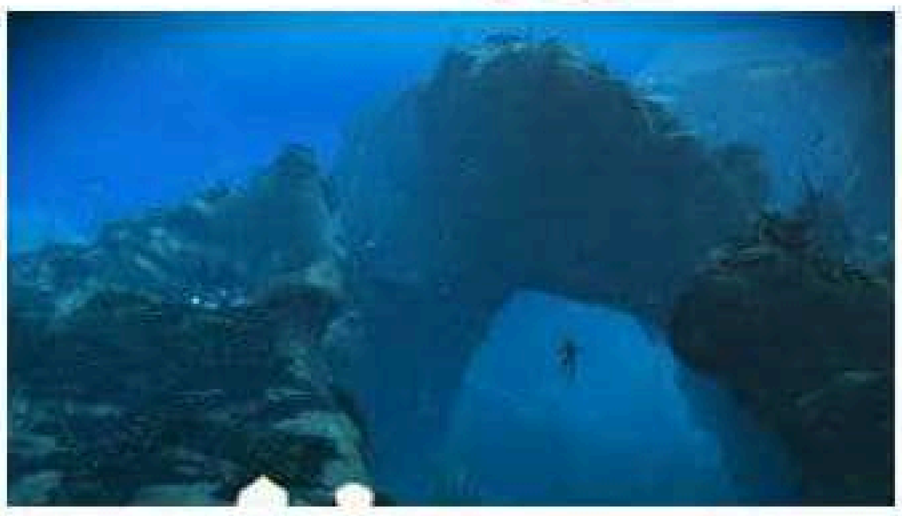
1.**Shallow areas:**
These areas contain **coral reefs** and **intertidal zones**

Intertidal zones: the area along the cost that disappears underwater at the high tide and appears at low tide



2.Deep areas:

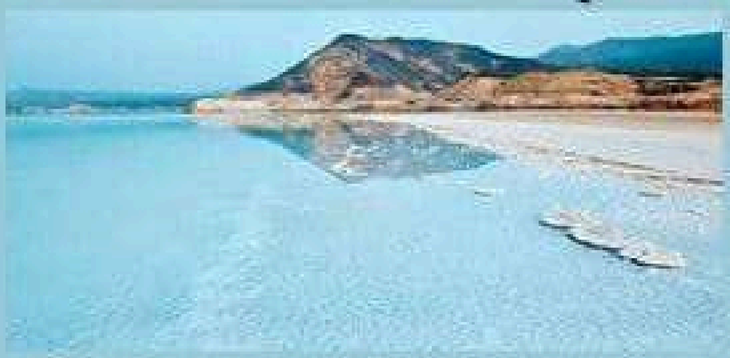
These areas called **abyssal zones** which are very deep areas in oceans ,so sunlight cannot reach them

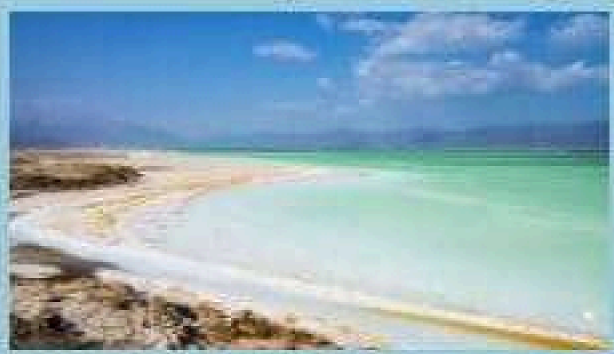


Saltwater Lakes:

(Assal in Djibouti –lake Manzala –lake Mariout –lake Bardawil- lake Idku)

Saltwater lakes (Lake Assal in Djibouti)





- It has a high concentration of natural salts (too salty for fish and most aquatic animals)

-There are few plants that can grow in this areas .

-There are many different types of bacteria live in it

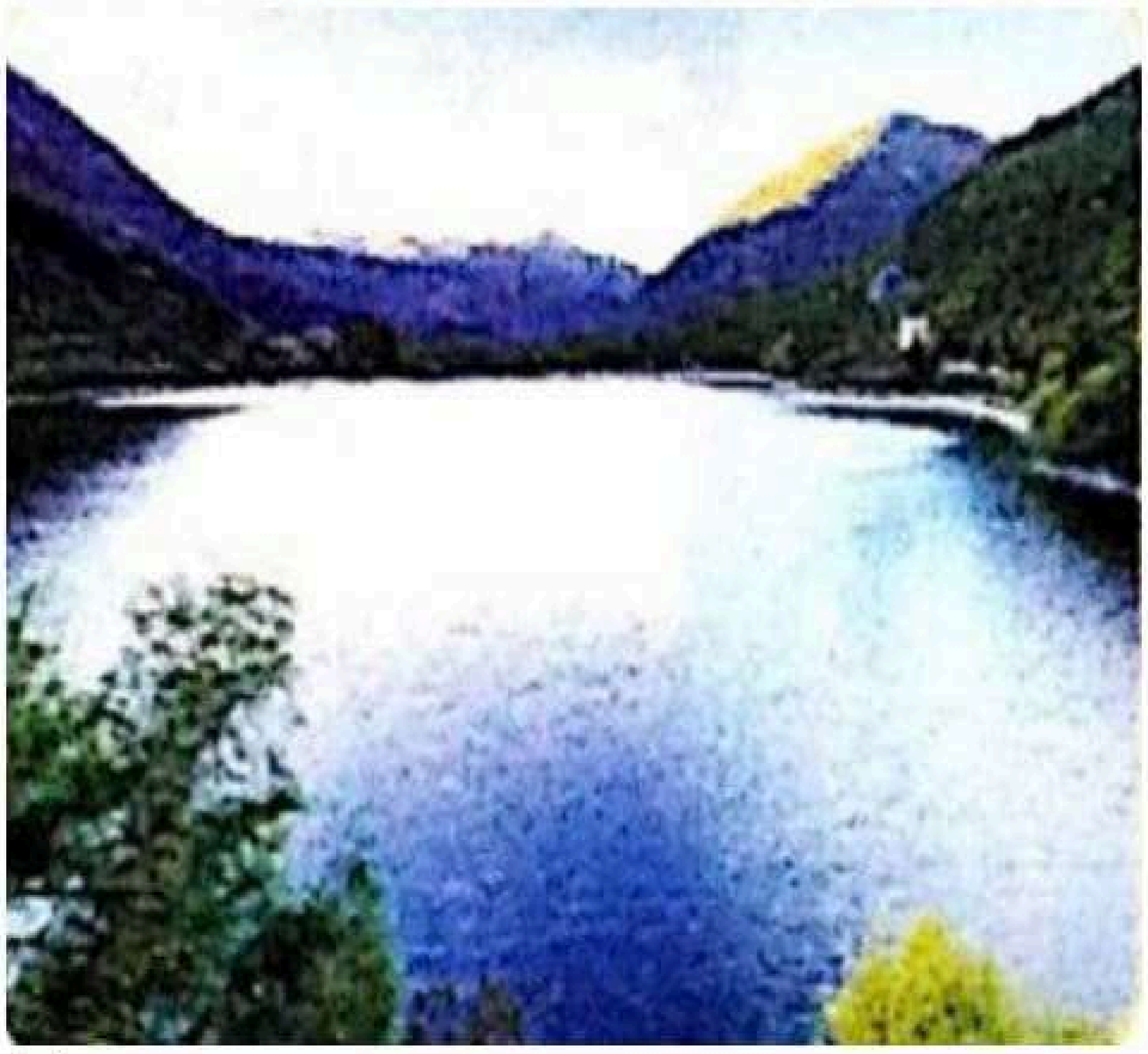
Freshwater ecosystems:

Freshwater ecosystems include:

1.ponds and lakes:

-in many ponds and lakes →the water presents all year

-some other ponds and lakes→ dry up in the hot summer months , so animals and plants must adapt to this change



Examples on Fresh water lakes:

1.lake Nasser 2.lake Qaroun
3.lake of wadi Al-Rayan

2.Flowing water bodies:

-Includes **rivers and streams** (small bodies of flowing water)



-Water is always moving in the flowing bodies

-Streams and rivers connect other bodies of water such as lakes ,oceans and seas

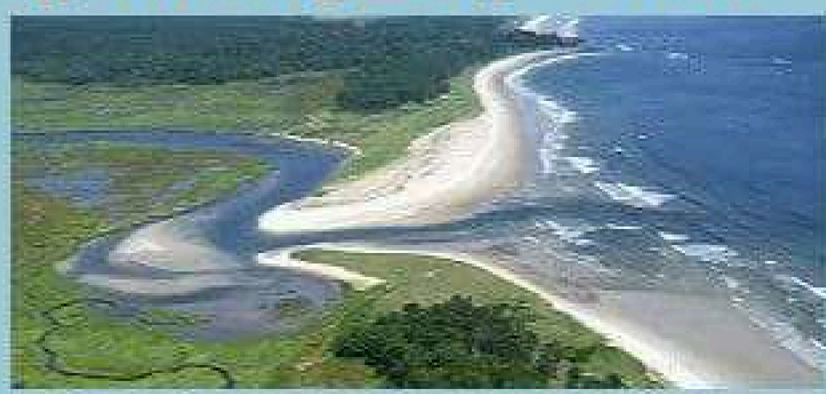
-Many different plants and Animals live in flowing water bodies

Estuary:

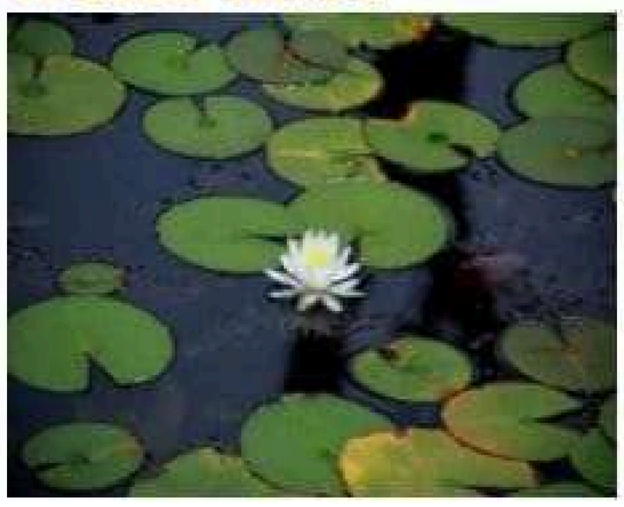
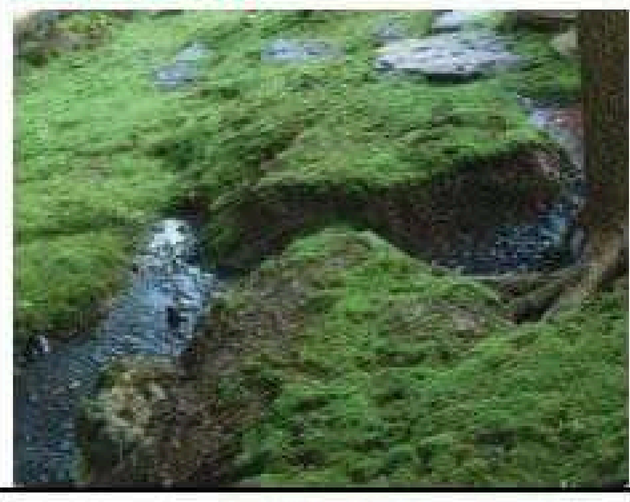
it is a special type of aquatic ecosystems that is formed along the edges of seas or oceans where a river or stream ends

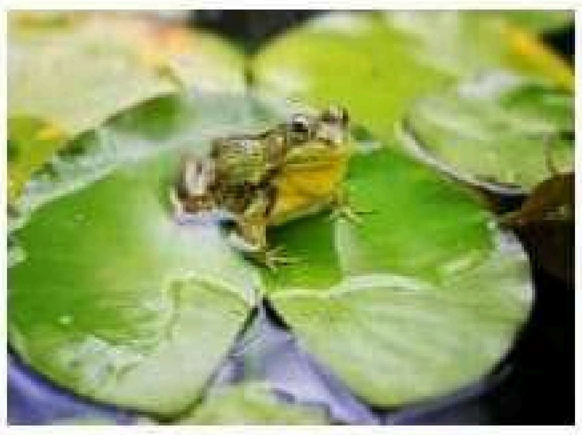
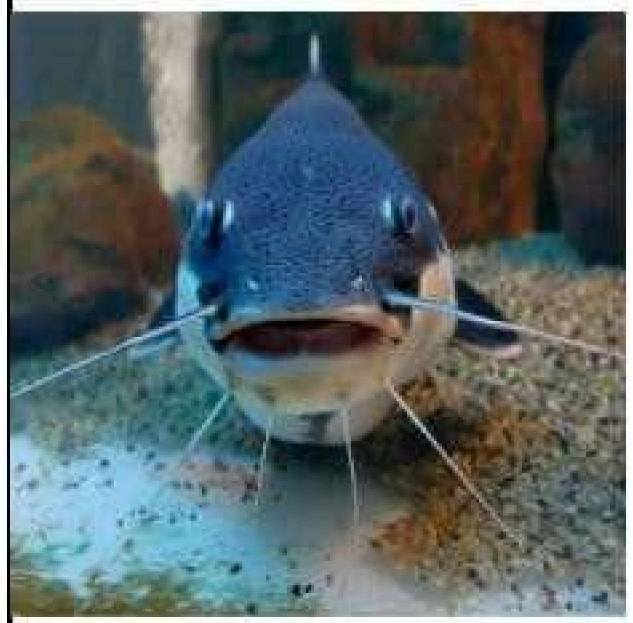
Estuaries have a mixtures of salt water from sea or ocean and freshwater from a river or stream

Salt water +Fresh water→ Estuary



Activity (11): Observe like a scientist: Aquatic Ecosystems

Types of aquatic ecosystem	Ponds	Streams	Oceans and seas
Type of water	fresh water	fresh water	salt water
Water movement	still water	they have running water where water in streams are cool and flows fast	moving in the form of waves that crash onto the shore
Species live in	1-Some plants like water lilies 	1-Some mosses attack themselves to the rocks of stream 	1. Kelp 

	2-Some insects live and lay their eggs in pond 3-Some types of worms such as leaches live at the bottom of ponds  4-Salamanders and frogs eat insects found in ponds  	2-Catfish  3-Crayfish  4-Trout 	2. Dolphin  3. Starfish  4. Mosses fish 

***Microplastics** are formed when plastic waste is broken down into small particles by wind, sunlight and wave action at sea.*

Aquatic organisms cannot differentiate between their real food and the plastic waste so they can eat these pieces of plastic and get harmed

Rivers carry waste materials from land to oceans

Exercises

A] Choose the correct answer:

1.cats and grass are parts of the ………………………

a. Atmosphere b. hydrosphere
c. biosphere d. geosphere

2……………………..is a saltwater lake in Egypt

a.Lake Nasser b. lake Qaroun

b.Lake manzala d. lake of wadi Al-Rayan

3.water lilies can live in ……

a. ponds b. seas

c. oceans d. deserts

2. All the following are factors affecting the breakdown of plastics into microplastics, except........................

a. sunlight. b. moon. c. wind. d. sea waves.

4. All the following organisms can be negatively affected by throwing plastic waste in seas, except...................

a. fish. b. shrimps. c. corals. d. foxes.

B] Put (√) or (x)

1.Living organisms are parts of geosphere ( )

2.some ponds and lakes may dry up in winter months ( )

3. Throwing plastic waste materials in rivers and seas never affect the life of aquatic organisms. ( )

C] Write scientific term

1.An area where a river or stream meets an ocean (………… ……… .)

2.the largest saltwater ecosystems that cover large parts of earth surface (……………………………..)

3.Areas of the ocean which contain coral reefs and intertidal zones (……………………..)

Unit 3 – concept 1 - questions

Lesson 1

Choose the correct answer:

1. All the following are components of the atmosphere, except ………………..
   a. oxygen gas c. molten rocks
   b. nitrogen gas d. water vapor

2. Rocks are broken down into smaller particles during …………………….. process.
   a. photosynthesis c. erosion
   b. weathering d. respiration

3. Which of the following is a part of the hydrosphere ?
   a. Water c. Rocks
   b. Air d. Plants

4. Which of the following is a part of the biosphere?
   a. Ice c. Water
   b. Clouds d. Animals

5. Water covers nearly ……………… of the Earth planet.
   a. 1 c. 1/5
   b. 1/2 d. 3/4

6. By heating of water it changes from ……………… state to ………………. state.
   a. solid - liquid c. liquid – gas
   b. liquid - solid d. gas - liquid

7. Water is used in all the following purposes, except ………………….

   a. recreation
   b. burning
   c. bathing
   d. manufacturing

8. At the beginning of water cycle in nature, water ………………… and goes into the air forming ………………….

   a. freezes - snow
   b. evaporates – clouds
   c. freezes - clouds
   d. evaporates – snow

Choose from column (B) what suits it in column (A):

(A)	(B)
1. Geosphere	**a**.Contains oxygen and nitrogen gases.
2. Atmosphere	**b**.Contains rocks and heavy metals.
3. Biosphere	**c**.Contains fresh water and salt water.
4. Hydrosphere	**d**.Contains animals and plants.
	e.Contains clouds and molten rocks.

(A)	(B)
1. Oceans	**a**.Contain fresh water or salt water.
2. Lakes	**b**.Contain salt water only.
3. Rivers	**c**.Contain mixture of fresh water and salt water.
4. Estuary	**d**.Contain fresh water only.
5. Groundwater	**e**.Is the water found under the Earth's surface.

	f.Is the water found in a gas state.

Put (✓) or (x):

1. Water on the Earth is divided into fresh water and salt water. ( )
2. The system that includes rocks and heavy metals is called hydrosphere. ( )
3. Rainwater is the only reason for weathering and erosion of rocks on the Earth's surface. ( )
4. Water is important for growing of living organisms. ( )
5. If there is no hydrosphere, the biosphere will not exist. ( )
6. Water can change into water vapour in extreme cold weather. ( )
7. The total amount of water on Earth doesn't change. ( )
8. Some animals and plants live in water. ( )
9. A river always flows from an area of low place to an area with higher place. ( )
10. When the amount of water decreases or water get polluted, biosphere will be affected. ( )

Write the scientific term of each of the following:

a. A water body that is surrounded by land. (……………..)
b. An area where the fresh water of a river meets the salt water of a sea. (……………………)
c. A cycle shows the continuous movement of water from the Earth to the atmosphere then to the Earth again. (……………………………..)

d. The process of breaking down of rocks into smaller particles due to the effect of rain, water or temperature.
(………………………………)

e. The process in which the small particles of rocks are transported from a place to another.
(………………………)

Complete the following sentences:

1. The Earth's system that includes all living organisms is called …………………………… .
2. Water is responsible for ……………………………… process and …………………… process of rocks.
3. Water bodies on Earth can change from liquid state to ………………… state by freezing, while they can change into ……………. by evaporation.
4. Fresh water forms some water bodies such as ………………… and some lakes, while seas and oceans and formed of …………… water.
5. When a river meets a sea, an ………………… is formed.
6. A water body that is formed of water from rain or melting of snow and moves into rivers or the ground is called ………………… .
7. During the water cycle in nature, water evaporates forming ………………… , then it returns back to the Earth's surface during …………… .
8. The groundwater found in soil and rocks is an example of interaction between two spheres which are ……………………….. and ……………………….. .

Give reasons for :

1. Water is important for all plants on Earth.

…………………………………………………………………………………………………

…………………………………………………………………………………………………

2. Water can affect nonliving things like rocks.

…………………………………………………………………………………………………

…………………………………………………………………………………………………

3. Our planet looks like a blue marble from the space.

…………………………………………………………………………………………………

…………………………………………………………………………………………………

4. Water that forms the hydrosphere is one of the renewable resources on Earth.

…………………………………………………………………………………………………

…………………………………………………………………………………………………

What happens to …?

1. The state of water when it is subjected to extreme cold weather.

…………………………………………………………………………………………………

…………………………………………………………………………………………………

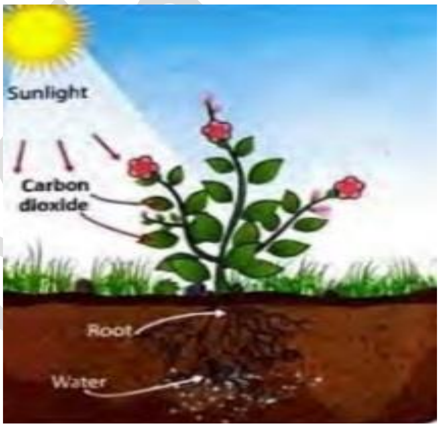
2. Fresh water of a river when it meets the salt water of a sea.

…………………………………………………………………………………………………

Green plants can make their food by photosynthesis process. In this process plants take water from the soil, carbon dioxide and sunlight.

From the previous paragraph, find out the words that belong to each system and write them in the following table.

Atmosphere	Hydrosphere
…………………………….	……………….
Biosphere	**Geosphere**
………………..	…………….



Lesson 2

Choose the correct answer:

1. Rainwater is a part of ………………..
   a. biosphere　　　c. geosphere
   b. hydrosphere　　d. atmosphere

2. Presence of dolphins in oceans represents an interaction between ……………….. and ………………..
   a. biosphere – hydrosphere
   b. hydrosphere – atmosphere
   c. biosphere - geosphere
   d. hydrosphere - geosphere

3. Falling of a small tree due to blowing of strong winds is an example of an interaction between ……………. and …………….
    a. geosphere- atmosphere
    b. biosphere – hydrosphere
    c. hydrosphere – geosphere
    d. atmosphere – biosphere

4. Groundwater is present under Earth's surface in rock and soil pores. This is an interaction between ………………. and ……………
    a. geosphere – atmosphere
    b. geosphere - hydrosphere
    c. biosphere – atmosphere
    d. hydrosphere – biosphere

5. Acacia tree has very long roots that grow downward through soil rocks to search for groundwater. Which Earth's sphere is not involved in this sentence?
    a. Hydrosphere   c. Atmosphere
    b. Geosphere   d. Biosphere

Put (✓) or (x):

1) Earth's systems don't interact with each other. (   )
2) When wind carries seeds of some plants to new places, an interaction between atmosphere and biosphere can be observed. (   )
3) Weathering of rocks as a result of the effect of rains is an example of an interaction between hydrosphere and biosphere. (   )
4) Water evaporates from the surface of a lake will move from atmosphere to hydrosphere. (   )

Complete the following sentences:

1. A rat that digs a barrow in the soil is an example of the interaction ……………………….. between and geosphere.
2. Irrigation of plants is an example of the interaction between two Earth's systems which are ……………………….. and …………………………… .
3. Air pollution due to burning of wood of trees is an example of an interaction between two Earth's spheres which are ………………………… and …………………………… .

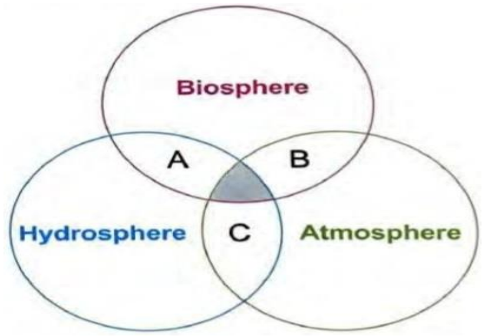
Give a reason for the following:

Hiding of worms inside the soil is an example of an interaction between two Earth's spheres.

…………………………………………………………………………………………………

…………………………………………………………………………………………………

The following model shows a diagram containing three interacted Earth's spheres. Read these sentences, then put (✓) or (x):



1. Area (B) can represent a student respire in oxygen gas. ( )
2. Area (A) can represent small rocks in an ocean. ( )
3. Area (c) can represent evaporation of sea water forming clouds and falling of rains. ( )

Lesson 3

Choose the correct answer:

1) The number of Earth's layers that form geosphere is ……. layers.
   a. two c. six
   b. four d. eight

2) Mountains and valleys are parts of ………………
   a. geosphere c. biosphere
   b. atmosphere d. hydrosphere

3) Nitrogen and oxygen are gases that make most of the …………………
   a. biosphere c. hydrosphere
   b. geosphere d. atmosphere

4) 97% of Earth's water is ……………..
   a. salt water c. fresh water
   b. sugar water d. frozen water

5) Formation of lakes is an example of an interaction between ………….. and ………………
   a. biosphere – hydrosphere
   b. atmosphere - biosphere
   c. hydrosphere - geosphere
   d. geosphere - atmosphere

6) Roots fix plants in the soil, this is an interaction between ………….. and ………………
   a. biosphere - atmosphere
   b. biosphere – geosphere
   c. hydrosphere - geosphere

d. hydrosphere – atmosphere

7) All the following water bodies contain salt water, except …………………

a. gulfs.   C. oceans
b. seas.   D. rivers

8) Which of the following is found between pores of rocks below Earth's surface?

a. Ice   C. Oceans
b. Groundwater   D. Water vapor

9) Polar bears live on ice, this is an example of an interaction between ………………… and ………………

a. atmosphere - hydrosphere
b. geosphere - hydrosphere
c. biosphere - geosphere
d. biosphere - cryosphere

Choose from column (B) what suits it in column (A):

(A)	(B)
1) The word "Geo" refers to	a) Water
2) The word "Hydro" refers to	b) Earth
3) The word "Atmos" refers to	c) Life
4) The word "bio" refers to	d) Vapor
	e) Sun

Put (✓) or (x):

1. All living organisms are parts of the atmosphere. ( )
2. Oceans, lakes and rivers are included in the hydrosphere. ( )
3. Deserts and forests are examples of biomes. ( )
4. Less than 50% of Earth's surface is covered with water. ( )
5. Most of the salt water on Earth is found in the form of frozen water. ( )
6. Fresh water forms about 3% of water on Earth. ( )
7. Without water, all forms of life will disappear. ( )
8. Wells and springs obtain their water from aquifers. ( )
9. All animals and plants can live in aquatic habitats. ( )

Write the scientific term of each of the following:

1) The system of Earth which contains all different landforms. (……………………………)
2) The Earth's system which is made up of water. (………………………………)
3) The frozen water part of the hydrosphere. (……………………….)
4) The Earth's system which consists of a mixture of gases surrounding Earth. (……………………………)
5) The system that includes humans, animals and plants on Earth. (………………………)
6) A large area of the world that has similar soil, climate, plants and animals. (…………………)

Complete the following sentences:

1. The Earth consists of 4 layers which are the ………………….. , the …………………….. and outer and inner core.
2. The large sheet of ice or snow that moves slowly over Earth's surface is known as …………………….. .
3. Breaking down of rocks by the effect of running water is an example of interaction between two Earth's systems which are …………………………… and ……………………….. .
4. The amount of fresh water on Earth is …………. than the amount of salt water.
5. Most lakes have ……………… water, while some other lakes have ……………… water.
6. The Earth's sphere that contains rocks, sand and soil is known as …………………………… .

Give reasons for:

1) Importance of atmosphere for plants in making their food.

……………………………………………………………………………………….

……………………………………………………………………………………….

2) More than 50% of known living organisms live in the aquatic environments.

……………………………………………………………………………………….

3) Most of the fresh water on Earth can't be used for drinking.

……………………………………………………………………………………….

……………………………………………………………………………………….

What happens if…?

1. Plants can't get carbon dioxide gas from air.

……………………………………………………………………………………………….

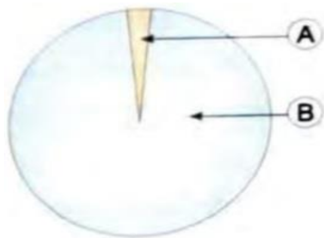
……………………………………………………………………………………………….

2. We compare the rainforest biome with the desert biome.

………………………………………………………………………………………………

………………………………………………………………………………………………

Look at this graph that shows the percentage of both salt water and fresh water in Earth's hydrosphere, then put (✓) or (x) in front of the following sentences:



1. Area A represents salt water. ( )
2. Seas and oceans are examples of water bodies that belong to area B. ( )
3. During water cycle, water evaporates from both areas A and B. ( )
4. The type of water in rivers belongs to area A. ( )

Read the following paragraph, then complete the sentences:

Frogs are amphibians, so they can live on land and in water, frogs inhale oxygen gas and exhale carbon dioxide gas. They feed on insects and use the water to hide from their predators.

1. Frogs can live on land, this is an interaction between biosphere and ……………………… .
2. Hiding of frogs in water is an interaction between biosphere and ………………………… .
3. Respiration of frog is an example of an interaction between biosphere and ………………………… .

Lesson 4

Choose the correct answer:

1) Cats and grass are parts of the ………………..
   a. atmosphere   c. biosphere
   b. hydrosphere   d. geosphere

2) Which of the following is not a component of the hydrosphere?
   a. Oceans   c. Lakes
   b. Rivers   d. Rocks

3) A spring flows out from a rock is an example of an interaction between ……………… and ……………..
   a. hydrosphere - geosphere
   b. hydrosphere - biosphere
   c. biosphere - geosphere

d. biosphere - atmosphere

4) Aquatic ecosystems can be classified into ……………. ecosystem and …………………. ecosystem.
   a. forest – desert
   b. savannah - tundra
   c. grassland - rainforest
   d. freshwater - saltwater

5) All the following are characteristics of abyssal zone, except ……………...
   a. They are very deep areas
   b. sunlight cannot reach it
   c. They are dark areas
   d. They are shallow areas

6) Rivers and streams contain ……………. water, while ponds contain …………… water.
   a. salt - fresh
   b. fresh - salt
   c. running - still
   d. still - running

7) Estuaries have a mixture of …………..… and ………………
   a. groundwater - rainwater
   b. fresh water - salt water
   c. groundwater - fresh water
   d. rainwater - salt water

8) Water lilies can live in …………….
   a. ponds
   B. seas
   c. oceans
   d. deserts

9) Among animals that can be in ponds are ……………. and …………..
   a. lions - salamanders
   b. dogs – frogs
   c. frogs - salamanders
   D. foxes – bears

10) ……………. is a saltwater lake in Egypt.

a. Lake Nasser
b. Lake Qaroun
c. Lake Manzalaa
d. Lake of Wadi Al-Rayan

11) All the following are saltwater lakes, except …………….

a. Lake Assal
b. Lake Nasser
c. Lake Idku
d. Lake Bardawil

Choose from column (B) what suits it in column (A):

(A)	(B)
1. Shallow areas of oceans 2. Abyssal areas of oceans 3. Mosses 4. Dolphins	**a**.Don't receive sunlight. **b**.contain coral reefs. **c**.Live in salt water. **d**.Live in fresh water. **e**.Live in deserts.

Put (✓) or (x):

1. Living organisms are parts of geosphere. ( )
2. All of the water on Earth represents the hydrosphere. ( )
3. There are no living organisms live in the hydrosphere. ( )
4. Gases which surround the Earth represents the atmosphere. ( )
5. There is only one type of aquatic ecosystems known as saltwater ecosystems. ( )
   The deep areas of the ocean that sunlight cannot reach it, are called abyssal zones. ( )

6. Some ponds and lakes may dry up in winter months. ( )
7. The place where two oceans meet is called an estuary. ( )
8. Some types of worms such as leeches live at the bottom of ponds. ( )
9. Rivers and streams are freshwater moving bodies. ( )
10. Some animals live in streams such as catfish, crayfish and trout. ( )

Write the scientific term of each of the following:

1) The largest saltwater ecosystems that cover large parts of Earth's surface. (……………………)
2) Areas of the ocean which contain coral reefs and intertidal zones. (…………………………………….)
3) The area along the coast that disappears at the high tide and appears at the low tide. (…………………………………)
4) An area where a river or a stream meets an ocean. (……………………)

Complete the following sentences:

1. Rainwater is needed for plant growth, this is an interaction between two Earth's spheres which are ………………………. and ………………………..
2. We can classify the aquatic ecosystems according to their amounts of salt into ………………………... ecosystem and ……………………… ecosystem.
3. Intertidal zone is the area along the ocean between the ……………… tide and ………… tide.

4. Abyssal zone in the ocean is a dark area as …………………… cannot reach it.
5. Some ponds and lakes dry up in the …………………… months.
6. According to water movement, ponds have …………….. water compared to streams that have …………………… water.
7. Kelp, starfish and Moses fish live in ……………………. which are considered the largest saltwater ecosystems in the Earth.

Give reasons for:

1) Some ponds and lakes may dry up during some months.

……………………………………………………………………………………………

……………………………………………………………………………………………

2) No green plants can survive in the abyssal zones of oceans.

……………………………………………………………………………………………

……………………………………………………………………………………………

3) Mosquitoes lay their eggs in ponds.

……………………………………………………………………………………………

……………………………………………………………………………………………

What happens to …?

1. Animals that live in lakes if they dry up.

……………………………………………………………………………………………

……………………………………………………………………………………………

2. The eggs of a frog if it lays its eggs in a river instead of a pond.

…………………………………………………………………………………………….

…………………………………………………………………………………………….

Look at the opposite picture, in which area A shows a river, and area shows an ocean, then choose the correct answer :

1) Area B represents ………..
   a. pond
   b. lake
   c. estuary
   d. groundwater



2) Water lilies can be found in ………….
   a. Area (A)
   b. Area (C)
   c. Both area (A) and area (C)
   d. Both area (B) and area (C)

3) All the following organisms can be found in area (C), except ………….
   a. dolphin
   b. starfish
   c. flounder fish
   d. frog

Lesson 5

Choose the correct answer:

1. Hydrologists study the movement of ……………… across the Earth.
   a. air B. rocks c. water d. planes

2. All the following are factors affecting the breakdown of plastics into microplastics, except ....
   a. sunlight b. moon c. wind d. sea waves
3. Water evaporation and its condensing on planet Earth show an interaction between ……………. and ……………
   a. hydrosphere – atmosphere
   b. hydrosphere – biosphere
   c. biosphere – geosphere
   d. biosphere- atmosphere

4. All the following organisms can be negatively affected by throwing plastic waste in seas, except ....
   a. fish b. shrimps c. corals d. foxes

Put (✓) or (X):

1) Microplastics are large plastic pieces which can harm oceans and aquatic life. ( )
2) aquatic organisms cannot differentiate between their real food and plastic waste. ( )
3) Microplastics can be found in water as well as in soil. ( )
4) Throwing plastic waste materials in rivers and seas never affect the life of aquatic organisms. ( )
5) Some human activities are responsible for water pollution. ( )

Write the scientific term of each of the following:

1. A type of pollution that occurs as a result of throwing waste in rivers and seas. (…………………………………)
2. The scientist who studies water and its movement around the Earth. (………………………..)
3. Tiny plastic particles that result from the breakdown of larger plastics. (……………………………)

Complete the following sentences:

1) Large plastic waste in aquatic ecosystems are ………….. harmful to aquatic organisms than microplastics.
2) Water runs across the land is an example of an interaction between hydrosphere and ………………………… .
3) When plastic waste materials are subjected to sunlight, wind or water waves, they are broken down into small particles known as ………………………… .
4) The scientists who study water on Earth are called …………………………….. .

Give reasons for:

Recycling the plastic bottles is more better than throwing them in seas and oceans.

……………………………………………………………………………………………….

……………………………………………………………………………………………….

What happens if:

Aquatic organisms eat pieces of plastic instead of their real food.

………………………………………………………………………………………………

A scientist took a sample from a water body. He found that there are very small pieces of plastic less than 5 mm in length which are known as microplastics.

Look at this picture, then put (✓) or (x):



1. This water body is a part of Earth's atmosphere. (   )
2. Living organisms that live in this water body represent an interaction between biosphere and hydrosphere. (   )
3. Microplastics are found only in salt water, but not in fresh water. (   )
4. Microplastics don't affect the organisms that live in this water body. (   )
5. Microplastics that found in this water body are more harmful to aquatic organisms than large plastic wastes. (   )

Unit 3 – concept 1 - answers

Lesson 1

Choose the correct answer:

1. All the following are components of the atmosphere, except ………………..
   a. oxygen gas
   b. nitrogen gas
   c. molten rocks
   d. water vapor

2. Rocks are broken down into smaller particles during …………………….. process.
   a. photosynthesis
   b. weathering
   c. erosion
   d. respiration

3. Which of the following is a part of the hydrosphere ?
   a. Water
   b. Air
   c. Rocks
   d. Plants

4. Which of the following is a part of the biosphere?
   a. Ice
   b. Clouds
   c. Water
   d. Animals

5. Water covers nearly ……………… of the Earth planet.
   a. 1
   b. 1/2
   c. 1/5
   d. 3/4

6. By heating of water it changes from ……………… state to ……………….. state.
   a. solid - liquid
   b. liquid - solid
   c. liquid – gas
   d. gas - liquid

7. Water is used in all the following purposes, except ……………………

   a. recreation   c. bathing
   b. burning   d. manufacturing

8. At the beginning of water cycle in nature, water ………………… and goes into the air forming …………………..

   a. freezes - snow   c. freezes - clouds
   b. evaporates – clouds   d. evaporates – snow

Choose from column (B) what suits it in column (A):

(A)		(B)
1. Geosphere	b	**a**.Contains oxygen and nitrogen gases.
2. Atmosphere	a	**b**.Contains rocks and heavy metals.
3. Biosphere	d	**c**.Contains fresh water and salt water.
4. Hydrosphere	c	**d**.Contains animals and plants.
		e.Contains clouds and molten rocks.

(A)		(B)
1. Oceans	b	**a**.Contain fresh water or salt water.
2. Lakes	a	**b**.Contain salt water only.
3. Rivers	d	**c**.Contain mixture of fresh water and salt water.
4. Estuary	c	**d**.Contain fresh water only.
5. Groundwater	e	**e**.Is the water found under the Earth's surface.

	f.Is the water found in a gas state.

Put (✓) or (x):

1. Water on the Earth is divided into fresh water and salt water. (✓)
2. The system that includes rocks and heavy metals is called hydrosphere. (**X**)
3. Rainwater is the only reason for weathering and erosion of rocks on the Earth's surface. (**X**)
4. Water is important for growing of living organisms. (✓)
5. If there is no hydrosphere, the biosphere will not exist. (✓)
6. Water can change into water vapour in extreme cold weather. (**X**)
7. The total amount of water on Earth doesn't change. (✓)
8. Some animals and plants live in water. (✓)
9. A river always flows from an area of low place to an area with higher place. (**X**)
10. When the amount of water decreases or water get polluted, biosphere will be affected. (✓)

Write the scientific term of each of the following:

a. A water body that is surrounded by land. (**Lake**)
b. An area where the fresh water of a river meets the salt water of a sea. (**Estuary**)
c. A cycle shows the continuous movement of water from the Earth to the atmosphere then to the Earth again. (**water cycle**)

d. The process of breaking down of rocks into smaller particles due to the effect of rain, water or temperature. (**Weathering**)

e. The process in which the small particles of rocks are transported from a place to another. (**Erosion**)

Complete the following sentences:

1. The Earth's system that includes all living organisms is called **biosphere**.
2. Water is responsible for **weathering** process and **erosion** process of rocks.
3. Water bodies on Earth can change from liquid state to **solid** state by freezing, while they can change into **gas** by evaporation.
4. Fresh water forms some water bodies such as **rivers** and some lakes, while seas and oceans and formed of **salt** water.
5. When a river meets a sea, an **estuary** is formed.
6. A water body that is formed of water from rain or melting of snow and moves into rivers or the ground is called **runoff**.
7. During the water cycle in nature, water evaporates forming **clouds**, then it returns back to the Earth's surface during **rain**.
8. The groundwater found in soil and rocks is an example of interaction between two spheres which are **hydrosphere** and **geosphere**.

Give reasons for :

1. Water is important for all plants on Earth.
    - **Because all plants need water to grow, and some of them live in water.**
2. Water can affect nonliving things like rocks.
    - **Because water can cause weathering and erosion of rocks.**
3. Our planet looks like a blue marble from the space.
    - **Because more than 70%of earth is covered by water.**
4. Water that forms the hydrosphere is one of the renewable resources on Earth.
    - **Because water can be replaced in nature through the water cycle.**

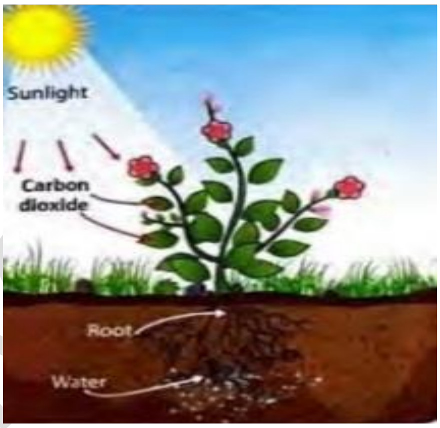
What happens to ...?

1. The state of water when it is subjected to extreme cold weather.
    - **It will be changed into solid state (ice).**
2. Fresh water of a river when it meets the salt water of a sea.
    - **An estuary is formed.**

Green plants can make their food by photosynthesis process. In this process plants take water from the soil, carbon dioxide and sunlight.

From the previous paragraph, find out the words that belong to each system and write them in the following table.

Atmosphere	Hydrosphere
Carbon dioxide	Water
Biosphere	**Geosphere**
Plants	Soil



Lesson 2

Choose the correct answer:

1. Rainwater is a part of ……………….
   a. biosphere
   b. hydrosphere
   c. geosphere
   d. atmosphere

2. Presence of dolphins in oceans represents an interaction between ………………. and ……………….
   a. biosphere – hydrosphere
   b. hydrosphere – atmosphere
   c. biosphere - geosphere
   d. hydrosphere - geosphere

3. Falling of a small tree due to blowing of strong winds is an example of an interaction between ……………. and …………….
    a. geosphere- atmosphere
    b. biosphere – hydrosphere
    c. hydrosphere – geosphere
    d. atmosphere – biosphere

4. Groundwater is present under Earth's surface in rock and soil pores. This is an interaction between ……………… and ……………
    a. geosphere – atmosphere
    b. geosphere - hydrosphere
    c. biosphere – atmosphere
    d. hydrosphere – biosphere

5. Acacia tree has very long roots that grow downward through soil rocks to search for groundwater. Which Earth's sphere is not involved in this sentence?
    a. Hydrosphere
    b. Geosphere
    c. Atmosphere
    d. Biosphere

Put (✓) or (x):

1) Earth's systems don't interact with each other. (X)
2) When wind carries seeds of some plants to new places, an interaction between atmosphere and biosphere can be observed. (✓)
3) Weathering of rocks as a result of the effect of rains is an example of an interaction between hydrosphere and biosphere. (X)
4) Water evaporates from the surface of a lake will move from atmosphere to hydrosphere. (X)

Complete the following sentences:

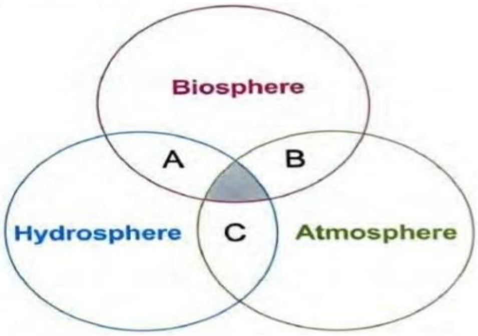
1. A rat that digs a barrow in the soil is an example of the interaction **biosphere** between and geosphere.
2. Irrigation of plants is an example of the interaction between two Earth's systems which are **hydrosphere** and **biosphere**.
3. Air pollution due to burning of wood of trees is an example of an interaction between two Earth's spheres which are **atmosphere** and **biosphere**.

Give a reason for the following:

Hiding of worms inside the soil is an example of an interaction between two Earth's spheres.

- **Because worms belong to biosphere, while soil belongs to geosphere.**

The following model shows a diagram containing three interacted Earth's spheres. Read these sentences, then put (✓) or (x):



1. Area (B) can represent a student respire in oxygen gas. (✓)
2. Area (A) can represent small rocks in an ocean. (X)
3. Area (c) can represent evaporation of sea water forming clouds and falling of rains. (✓)

Lesson 3

Choose the correct answer:

1) The number of Earth's layers that form geosphere is ……. layers.
   a. two
   b. four
   c. six
   d. eight

2) Mountains and valleys are parts of ………………
   a. geosphere
   b. atmosphere
   c. biosphere
   d. hydrosphere

3) Nitrogen and oxygen are gases that make most of the …………………
   a. biosphere
   b. geosphere
   c. hydrosphere
   d. atmosphere

4) 97% of Earth's water is ……………..
   a. salt water
   b. sugar water
   c. fresh water
   d. frozen water

5) Formation of lakes is an example of an interaction between ………….. and ………………
   a. biosphere – hydrosphere
   b. atmosphere - biosphere
   c. hydrosphere - geosphere
   d. geosphere - atmosphere

6) Roots fix plants in the soil, this is an interaction between ………….. and ………………
   a. biosphere - atmosphere
   b. biosphere – geosphere
   c. hydrosphere - geosphere

d. hydrosphere – atmosphere

7) All the following water bodies contain salt water, except …………………
   a. gulfs. C. oceans
   b. seas. D. rivers

8) Which of the following is found between pores of rocks below Earth's surface?
   a. Ice C. Oceans
   b. Groundwater D. Water vapor

9) Polar bears live on ice, this is an example of an interaction between ………………… and ………………
   a. atmosphere - hydrosphere
   b. geosphere - hydrosphere
   c. biosphere - geosphere
   d. biosphere - cryosphere

Choose from column (B) what suits it in column (A):

(A)		(B)
1) The word "Geo" refers to	b	a) Water
2) The word "Hydro" refers to	a	b) Earth
3) The word "Atmos" refers to	d	c) Life
4) The word "bio" refers to	c	d) Vapor
		e) Sun

Put (✓) or (x):

1. All living organisms are parts of the atmosphere. (**X**)
2. Oceans, lakes and rivers are included in the hydrosphere. (✓)
3. Deserts and forests are examples of biomes. (✓)
4. Less than 50% of Earth's surface is covered with water. (**X**)
5. Most of the salt water on Earth is found in the form of frozen water. (**X**)
6. Fresh water forms about 3% of water on Earth. (✓)
7. Without water, all forms of life will disappear. (✓)
8. Wells and springs obtain their water from aquifers. (✓)
9. All animals and plants can live in aquatic habitats. (**X**)

Write the scientific term of each of the following:

1) The system of Earth which contains all different landforms. (**Geosphere**)
2) The Earth's system which is made up of water. (**Hydrosphere**)
3) The frozen water part of the hydrosphere. (**Cryosphere**)
4) The Earth's system which consists of a mixture of gases surrounding Earth. (**Atmosphere**)
5) The system that includes humans, animals and plants on Earth. (**Biosphere**)
6) A large area of the world that has similar soil, climate, plants and animals. (**Biome**)

Complete the following sentences:

1. The Earth consists of 4 layers which are the **crust**, the **mantle** and outer and inner core.
2. The large sheet of ice or snow that moves slowly over Earth's surface is known as **glacier**.
3. Breaking down of rocks by the effect of running water is an example of interaction between two Earth's systems which are **geosphere** and **hydrosphere**.
4. The amount of fresh water on Earth is **less** than the amount of salt water.
5. Most lakes have **fresh** water, while some other lakes have **salt** water.
6. The Earth's sphere that contains rocks, sand and soil is known as **geosphere**.

Give reasons for:

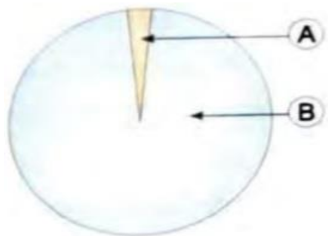
1) Importance of atmosphere for plants in making their food.
    - **Because plants take in carbon dioxide gas from air during photosynthesis process.**
2) More than 50% of known living organisms live in the aquatic environments.
    - **Because water covers about 70% of earth's surface.**
3) Most of the fresh water on Earth can't be used for drinking.
    - **Because most of the fresh water on Earth are in the form of frozen water.**

What happens if…?

1. Plants can't get carbon dioxide gas from air.
    - **They will not be able to make their food by photosynthesis process.**

2. We compare the rainforest biome with the desert biome.
    - **Climate, plants and animals are different in the two biomes.**

Look at this graph that shows the percentage of both salt water and fresh water in Earth's hydrosphere, then put (✓) or (x) in front of the following sentences:



1. Area A represents salt water. (**X**)
2. Seas and oceans are examples of water bodies that belong to area B. (✓)
3. During water cycle, water evaporates from both areas A and B. (✓)
4. The type of water in rivers belongs to area A. (✓)

Read the following paragraph, then complete the sentences:

Frogs are amphibians, so they can live on land and in water, frogs inhale oxygen gas and exhale carbon dioxide gas. They feed on insects and use the water to hide from their predators.

1. Frogs can live on land, this is an interaction between biosphere and **geosphere**.
2. Hiding of frogs in water is an interaction between biosphere and **hydrosphere**.
3. Respiration of frog is an example of an interaction between biosphere and **atmosphere**.

Lesson 4

Choose the correct answer:

1) Cats and grass are parts of the ……………….
    a. atmosphere   c. biosphere
    b. hydrosphere   d. geosphere

2) Which of the following is not a component of the hydrosphere?
    a. Oceans   c. Lakes
    b. Rivers   d. Rocks

3) A spring flows out from a rock is an example of an interaction between …………….. and …………….
    a. hydrosphere - geosphere
    b. hydrosphere - biosphere
    c. biosphere - geosphere
    d. biosphere - atmosphere

4) Aquatic ecosystems can be classified into …………….. ecosystem and ………………… ecosystem.
    a. forest – desert   c. grassland - rainforest
    b. savannah - tundra   d. freshwater - saltwater

5) All the following are characteristics of abyssal zone, except ....

a. They are very deep areas
b. sunlight cannot reach it
c. They are dark areas
d. They are shallow areas

6) Rivers and streams contain .... water, while ponds contain .... water.

a. salt - fresh
b. fresh - salt
c. running - still
d. still - running

7) Estuaries have a mixture of .... and ....

a. groundwater - rainwater
b. fresh water - salt water
c. groundwater - fresh water
d. rainwater - salt water

8) Water lilies can live in ....

a. ponds
B. seas
c. oceans
d. deserts

9) Among animals that can be in ponds are .... and ....

a. lions - salamanders
b. dogs – frogs
c. frogs - salamanders
D. foxes – bears

10) .... is a saltwater lake in Egypt.

a. Lake Nasser
b. Lake Qaroun
c. Lake Manzalaa
d. Lake of Wadi Al-Rayan

11) All the following are saltwater lakes, except ....

a. Lake Assal
b. Lake Nasser
c. Lake Idku
d. Lake Bardawil

Choose from column (B) what suits it in column (A):

(A)		(B)
1. Shallow areas of oceans	b	**a**.Don't receive sunlight.
2. Abyssal areas of oceans	a	**b**.contain coral reefs.
3. Mosses	d	**c**.Live in salt water.
4. Dolphins	c	**d**.Live in fresh water.
		e.Live in deserts.

Put (✓) or (x):

1. Living organisms are parts of geosphere. (X)
2. All of the water on Earth represents the hydrosphere. (✓)
3. There are no living organisms live in the hydrosphere. (X)
4. Gases which surround the Earth represents the atmosphere. (✓)
5. There is only one type of aquatic ecosystems known as saltwater ecosystems. (X)
   The deep areas of the ocean that sunlight cannot reach it, are called abyssal zones. (✓)
6. Some ponds and lakes may dry up in winter months. (X)
7. The place where two oceans meet is called an estuary. (X)
8. Some types of worms such as leeches live at the bottom of ponds. (✓)

9. Rivers and streams are freshwater moving bodies. (✓)
10. Some animals live in streams such as catfish, crayfish and trout. (✓)

Write the scientific term of each of the following:

1) The largest saltwater ecosystems that cover large parts of Earth's surface. (**Oceans**)
2) Areas of the ocean which contain coral reefs and intertidal zones. (**Shallow areas**)
3) The area along the coast that disappears at the high tide and appears at the low tide. (**Intertidal zone**)
4) An area where a river or a stream meets an ocean. (**Estuary**)

Complete the following sentences:

1. Rainwater is needed for plant growth, this is an interaction between two Earth's spheres which are **hydrosphere** and **biosphere**.
2. We can classify the aquatic ecosystems according to their amounts of salt into **freshwater** ecosystem and **saltwater** ecosystem.
3. Intertidal zone is the area along the ocean between the **high** tide and **low** tide.
4. Abyssal zone in the ocean is a dark area as **sunlight** cannot reach it.
5. Some ponds and lakes dry up in the **summer** months.
6. According to water movement, ponds have **still** water compared to streams that have **running** water.

7. Kelp, starfish and Moses fish live in **oceans** which are considered the largest saltwater ecosystems in the Earth.

Give reasons for:

1) Some ponds and lakes may dry up during some months.
    - **Because when the temperature increases in summer, water evaporates faster.**

2) No green plants can survive in the abyssal zones of oceans.
    - **Because the abyssal zones don't receive sunlight, which is important for making food in plants.**

3) Mosquitoes lay their eggs in ponds.
    - **Because ponds have still water, so the eggs will not move away.**

What happens to …?

1. Animals that live in lakes if they dry up.
    - **They have to adapt the changes that happen, or they will die.**

2. The eggs of a frog if it lays its eggs in a river instead of a pond.
    - **The eggs will move away with the running water of a river.**

Look at the opposite picture, in which area A shows a river, and area shows an ocean, then choose the correct answer :

1) Area B represents ....
   a. pond
   b. lake
   c. estuary
   d. groundwater



2) Water lilies can be found in ....
   a. Area (A)
   b. Area (C)
   c. Both area (A) and area (C)
   d. Both area (B) and area (C)

3) All the following organisms can be found in area (C), except ....
   a. dolphin
   b. starfish
   c. flounder fish
   d. frog

Lesson 5

Choose the correct answer:

1. Hydrologists study the movement of .... across the Earth.
   a. air   B. rocks   c. water   d. planes

2. All the following are factors affecting the breakdown of plastics into microplastics, except ....
   a. sunlight   b. moon   c. wind   d. sea waves

3. Water evaporation and its condensing on planet Earth show an interaction between ……………. and ……………
   a. hydrosphere – atmosphere
   b. hydrosphere – biosphere
   c. biosphere – geosphere
   d. biosphere- atmosphere

4. All the following organisms can be negatively affected by throwing plastic waste in seas, except ……………..
   a. fish b. shrimps c. corals d. foxes

Put (✓) or (X):

1) Microplastics are large plastic pieces which can harm oceans and aquatic life. (**X**)
2) aquatic organisms cannot differentiate between their real food and plastic waste. (✓)
3) Microplastics can be found in water as well as in soil. (✓)
4) Throwing plastic waste materials in rivers and seas never affect the life of aquatic organisms. (**X**)
5) Some human activities are responsible for water pollution. (✓)

Write the scientific term of each of the following:

1. A type of pollution that occurs as a result of throwing waste in rivers and seas. (**water pollution**)
2. The scientist who studies water and its movement around the Earth. (**Hydrologists**)
3. Tiny plastic particles that result from the breakdown of larger plastics. (**microplastics**)

Complete the following sentences:

1) Large plastic waste in aquatic ecosystems are **less** harmful to aquatic organisms than microplastics.
2) Water runs across the land is an example of an interaction between hydrosphere and **geosphere**.
3) When plastic waste materials are subjected to sunlight, wind or water waves, they are broken down into small particles known as **microplastics**.
4) The scientists who study water on Earth are called **hydrologists**.

Give reasons for:

Recycling the plastic bottles is more better than throwing them in seas and oceans.

- **Because plastic pollutes water and affects the survival of aquatic organisms.**

What happens if:

Aquatic organisms eat pieces of plastic instead of their real food.

- **Aquatic organisms get harmed.**

A scientist took a sample from a water body. He found that there are very small pieces of plastic less than 5 mm in length which are known as microplastics.

Look at this picture, then put (✓) or (x):



1. This water body is a part of Earth's atmosphere. (**X**)
2. Living organisms that live in this water body represent an interaction between biosphere and hydrosphere. (✓)
3. Microplastics are found only in salt water, but not in fresh water. (**X**)
4. Microplastics don't affect the organisms that live in this water body. (**X**)
5. Microplastics that found in this water body are more harmful to aquatic organisms than large plastic wastes. (✓)